

CAREER DECISION-MAKING IN DIVERSE NURSING STUDENTS:
CHOOSING A CAREER IN NURSING

Geoffrey Aaron McCord

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Doctoral Committee

Julie L. Otte, RN, PhD, Chair

Rebecca Ellis, RN, PhD

December 11, 2023

Janet S. Carpenter, RN, PhD

Carly E. Schall, PhD

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DEDICATION

This work is dedicated to my wife, Beth. This dream would not have become a reality without her support, patience, and tolerance. This is also dedicated to my children, Molly, Gabe, Finn, Naomi, and Norah. Always be skeptical, inquisitive, and humble. I love you all very much.

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Geoffrey Aaron McCord

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The nursing profession lacks diversity that reflects the population it serves. The population of LPN/LVN and ADN students are known to be more diverse than BSN students. Little is known about the differences between the students in the three levels of nursing programs (LPN/LVN, ADN, BSN), including reasons for choosing nursing, and barriers and facilitators. The McCord Nursing Career and Educational Decision Pathway Conceptual Framework guided this study. A quantitative survey was conducted of current nursing students in the US. The study asked demographic information as well as motivating factors, barriers, and facilitators for choosing nursing and their program type (LPN/LVN, ADN, BSN). Responses from 741 nursing students in LPN/LVN, ADN, and BSN programs from 26 states. The study found significant differences between the students in the three educational pathways. There are significant racial and financial differences and differences in reasons for choosing nursing, educational background, commitments outside of school, and barriers to goal achievement. LPN/LVN students were more likely to be Black and ADN students were more likely to be Hispanic. There was greater racial diversity in the LPN/LVN and ADN groups. LPN/LVN students are more likely to identify nursing as their first career choice and most want to be an RN. LPN/LVN and ADN students were more worried than BSN students about their family commitments, financial obligations, and their ability to succeed in nursing school. Some of the lack of diversity in BSN programs reflects the challenges that racial minorities face in goal achievement. Identified barriers include outside financial commitments, the cost

of nursing programs, and the length of time of the programs. The goal to increase diversity in nursing should consider the entire population of those who want to become nurses.

Julie L. Otte, RN, PhD, Chair

Rebecca Ellis, RN, PhD

Janet S. Carpenter, RN, PhD

Carly E. Schall, PhD

TABLE OF CONTENTS

| | |
|--|------|
| List of Tables | xii |
| List of Figures | xiii |
| List of Abbreviations | xiv |
| Chapter One: Introduction | 1 |
| National Need for Diverse Nursing Workforce | 1 |
| Calls to Increase Diversity in Nursing Practice | 2 |
| Lack of Diversity in Nursing Education | 3 |
| Purpose Statement..... | 4 |
| Overview of Proposed Study | 6 |
| Chapter Two: Review of Literature | 8 |
| Integrative Review #1: Reasons Why Students Choose Nursing | 8 |
| Design | 8 |
| Search Methods..... | 9 |
| Search Results | 10 |
| Results..... | 11 |
| Discussion | 15 |
| Conclusion | 18 |
| Integrative Review #2: Reasons Why Students Choose Nursing | 19 |
| Design | 20 |
| Search Methods..... | 20 |
| Search Results | 22 |
| Results..... | 23 |
| Discussion | 27 |
| Conclusion | 34 |
| Summary of Chapter Two..... | 35 |
| Chapter Three: Methodology | 36 |
| Framework | 37 |
| Contributing Factors or Reasons for Nursing as Career | 39 |
| Person Characteristics | 40 |
| Awareness Factors | 40 |
| Motivating Factors | 41 |
| Readiness for Career Decision..... | 41 |
| Methods..... | 43 |
| Design | 43 |
| Sample Criteria | 44 |
| Procedures..... | 45 |
| Measures | 47 |
| Statistical plan..... | 50 |
| Summary | 56 |
| Chapter Four: Results | 57 |
| Sample Size | 57 |
| Research Question One..... | 59 |
| Sample Characteristics..... | 59 |
| Research Question Two | 65 |

| | |
|--|-----|
| Awareness Factors | 65 |
| Motivating Factors | 67 |
| Research Question Three | 69 |
| Facilitators and Barriers | 69 |
| Self-Efficacy and Emotional Support | 72 |
| Facilitators and Barriers to Pathway by Race | 75 |
| Research Question Four | 77 |
| LPN/LVN Prediction Model | 78 |
| ADN Prediction Model | 79 |
| BSN Prediction Model | 81 |
| Chapter Five: Discussion | 84 |
| Interpretation of Research Findings | 84 |
| Sample Characteristics | 84 |
| Research Aim One | 85 |
| Age Differences by Pathway | 85 |
| Racial Differences by Pathway | 86 |
| Gender Differences by Pathway | 87 |
| Socioeconomic and Education Factors by Pathway | 88 |
| Research Aim Two | 92 |
| Awareness Factors | 92 |
| Motivating Factors | 94 |
| Research Aim Three | 95 |
| LPN/LVN Students | 96 |
| ADN Students | 98 |
| BSN Students | 100 |
| Research Aim Four | 104 |
| LPN/LVN Predictors | 104 |
| ADN Predictors | 104 |
| BSN Predictors | 105 |
| Revised Conceptual Framework | 106 |
| Limitations | 108 |
| Implication for Future Research | 109 |
| LPN/LVNs | 109 |
| ADNs | 111 |
| Descriptive Work | 112 |
| Bridge Programs | 112 |
| Support Programs | 112 |
| Conclusions | 113 |
| Appendix | 114 |
| Tables | 115 |
| Figures | 130 |
| References | 132 |
| Curriculum Vitae | |

LIST OF TABLES

| | |
|--|-----|
| Table A-1: Results of Integrative Review #1 | 115 |
| Table A-2: Data Extraction Integrative Review #1 | 120 |
| Table A-3: Results of Integrative Review #2 | 121 |
| Table A-4: Data Evaluation Integrative Review #2..... | 127 |
| Table A-5: Comparison of Interventions Integrative Review #2..... | 128 |
| Table 6: Survey Demographic by Program Type | 63 |
| Table 7: Percent Ranked First or Second Greatest Barrier by LPN/LVN Students | 70 |
| Table 8: Significant Predictors of LPN/LVN over ADN or BSN | 79 |
| Table 9: Significant Predictors of ADN over LPN/LVN or BSN | 80 |
| Table 10: Significant Predictors of BSN over LPN/LVN or ADN | 82 |

LIST OF FIGURES

| | |
|---|-----|
| Figure A-1: PRISMA Diagram Integrative Review #1 | 130 |
| Figure A-2: PRISMA Diagram Integrative Review #2 | 131 |
| Figure 3: McCord Nursing Career and Educational Decision Pathway Conceptual Framework | 38 |

LIST OF ABBREVIATIONS

AACN American Association of Colleges of Nursing

ADN Associate degree nurse

BSN Baccalaureate degree nurse

BSNP Baccalaureate degree nursing education program

CCNE Commission on Collegiate Nursing Education

CINAHL Cumulative Index to Nursing and Allied Health Literature

ES Emotional support

GED General Education Development

GSE General self-efficacy

HRSA Health Resources and Services Administration

IOM Institute of Medicine

LPN/LVN Licensed practical nurse/licensed vocational nurse

NCLEX National Council Licensure Examination

NCSBN National Council of State Boards of Nursing

RN Registered nurse

CHAPTER ONE: INTRODUCTION

National Need for Diverse Nursing Workforce

Professional healthcare organizations have emphasized the need to diversify the healthcare workforce, specifically in the nursing profession. Nurses comprise an essential component of the healthcare workforce and account for almost 50% of the worldwide healthcare workforce, numbering an estimated 20.7 million.¹ In the United States (U.S.), there are 4 million registered associate degree (ADN) and baccalaureate degree (BSN) prepared nurses, and nearly one million licensed practical nurses/licensed vocational nurses (LPN/LVNs).² In the U.S., the American Association of Colleges of Nursing (AACN) has identified a worsening nursing shortage due to retirements of the baby boomer generation and attrition related to COVID-19 burnout.^{3,4} The immediate need for nurses is significant, with open nursing positions continuing to increase across communities in the U.S. Despite the need to increase the number of nurses, there is also a significant need to ensure the workforce demographics align with the population served. Of registered nurses (RNs), only 19.2% identify as someone in a racial, ethnic, and/or gender-diverse population, and only 9% identify as male.⁵ For LPN/LVNs (whose designation varies by state), racial and ethnic minorities account for 29% of the workforce and 8% are men.⁵

A nursing workforce that does not reflect the diversity of the communities they serve has negative effects on the health outcomes of racial and ethnic minorities.⁶⁻⁸ The U.S. population is steadily becoming more racially and ethnically diverse. The total population of Hispanic, Black, Asian, Pacific Islander, Native American, mixed-race, and other non-White racial groups is shifting and by 2050 it is expected that more than half of

the U.S. population will be non-White.⁹ Overall, racial and ethnic minority populations in the U.S. have grown from about 30% in 2000 to about 40% in 2019 and now comprise a majority (51%) of individuals under 19 years of age.¹⁰ As the U.S. becomes more diverse, nurses who represent the demographics of the population are requisite to providing culturally sensitive care.

Calls to Increase Diversity in Nursing Practice

In 2011, the Institute of Medicine's (IOM) "The Future of Nursing: Leading Change, Advancing Health" report declared the need to increase diversity in nursing.¹¹ In the statement, the IOM emphasized that nurses, health professionals, and others needed to increase efforts by changing the nursing education system to recruit underrepresented students from all backgrounds.¹¹ The IOM report noted that by increasing nursing diversity, there would be greater cultural diversity in the workplace leading to better healthcare outcomes for racial and ethnic minorities by improving access to and quality of care.¹²

The National League for Nursing (NLN) also emphasized the importance of diversity in nursing in their position paper in 2016.¹³ The publication called for nursing education to "step up" in addressing the lack of diversity in the nursing workforce. In emphasizing the need for increased diversity, the NLN stated that "Nursing pipeline programs are instrumental in increasing diversity in nursing education and ultimately the nursing profession."¹³ No details regarding the definition, construction, or implementation of a nursing pipeline were available within the position statement.

The AACN published a statement in 2017 on the importance of diversity, equity, and inclusion.¹⁴ The publication noted the advantages of education in a diverse setting.

The paper also stated that diversity and inclusion within nursing can help to address health inequalities. The publication did not provide evidence-based interventions or guidance for committed nursing programs to follow in the interest of increasing diversity. Although both organizational statements clearly outline the need for a diversified workforce, as noted there is no direct roadmap, or directive plans to help nursing programs and healthcare clinical settings to implement strategies or programs to meet this need.

Lack of Diversity in Nursing Education

It has been noted that the profession of nursing lacks the diversity needed to best serve the current population. The lack of diversity in nursing corresponds to a relative lack of diversity in nursing students enrolled in nursing programs.¹³⁻¹⁵ One way to increase racial and gender diversity in practice is to increase efforts to admit students from these underrepresented groups to nursing programs. Increasing the diversity of the nursing workforce could be improved by understanding the process by which people select nursing as a career choice, best practices for recruitment of applicants, admissions, retention, and graduation trends in the various nursing programs.^{11,14} Knowledge of the decision-making process, including reasons, facilitators, and barriers to prospective nursing students could aid in this endeavor to increase diversity within nursing education programs. However, much of the available research focuses on diversity through descriptive and intervention studies on the holistic admissions process and retention of underrepresented students in nursing programs.¹⁵⁻²⁰

Based on statistics from the National Council of State Boards of Nursing (NCSBN), the RN (ADN and BSN) population is 80.8% White, 6.2% African

American/Black, 7.5% Asian-Pacific Islander, and 5.3% Hispanic. The year-over-year trend has been toward a small increase in diversity. AACN has reported that there has been an increase in diverse graduates from baccalaureate programs. In the 2020 report, of BSN graduates 11% were Black/African Americans, 12% were Hispanic Latino, and 3% were of two or more races.²¹ Overall, 33.8% of nursing graduates in BSN programs are from racial or ethnic diverse groups.²¹

To increase the applications of diverse students to nursing education programs a better understanding of the motivations, reasoning, facilitators, and barriers of those who choose nursing is important. Additionally, an understanding of the educational pathways that are selected is necessary. Educational duration, academic performance, cost, and job opportunities have potential implications on the decision to pursue LPN/LVN, ADN, or BSN education. This level of understanding is absent in the literature but is necessary to transform the nursing workforce to more closely reflect the demographics of the communities served. After the choice to pursue nursing, the next sequential step is the selection of the educational pathway. An investigation into potential differences in terms of decision-making, facilitators, and barriers amongst those from diverse backgrounds is an initial research step in better understanding students underrepresented in nursing.

Purpose Statement

The nursing education literature lacks sufficient research on why candidates of underrepresented backgrounds select nursing as a career pathway. Understanding these reasons is requisite in determining how to recruit diverse and underrepresented students into the various types of nursing programs. Therefore, the purpose of this dissertation

study is to conduct a cross-sectional survey of current nursing students to answer the following four aims.

1. Describe the characteristics of age, race, ethnicity, gender, socioeconomic factors, and educational background among the students enrolled in a pre-licensure nursing program and determine if there are significant differences among groups by program type (LPN/LVN, ADN, BSN).
2. Describe the awareness and motivating factors for the selection of a pre-licensure education program (LPN/LVN, ADN, BSN) and determine if there are differences by program type (LPN/LVN, ADN, BSN).
3. Describe readiness for career decision factors such as facilitators, barriers, self-efficacy, and emotional support by type of nursing program and determine if there are significant differences in these factors by program type (LPN/LVN, ADN, BSN) and race.
4. Explore the predictive factors (personal characteristics, awareness, motivation, readiness for career decision) in determining the LPN/LVN vs RN (ADN and BSN) educational track.

Information from the above aims will provide new data regarding the overall decision-making process in the nursing educational system. Through this new recruitment strategies can be created that are built on expanded knowledge of nursing students, thereby increasing a pool of more diverse students.

For the purposes of this dissertation project, diversity in the nursing profession and inclusion will be defined using the AACN's definition: "individual attributes that extend beyond race, age, and gender to also include, but are not limited to, characteristics

such as national origin, immigrant status, language, color, disability, ethnicity, religion, sexual orientation, gender identity, socioeconomic status (SES), veteran status, and family structures.”²² Inclusion is defined by the AACN as “a culture that encourages collaboration, flexibility, and fairness as well as leverages diversity so that all individuals can participate and contribute to their full potential. An inclusive environment must be created for diversity to flourish.”²¹ The goal of increased diversity in nursing is necessary for greater inclusion and integration within the communities nurses serve.

In addition, the terms used throughout will be guided by “Updated Guidance on the Reporting of Race and Ethnicity in Medical and Science Journals” published by the American Medical Association.²³ Based on these guidelines, the phrase *racial and ethnic minorities* will be used as opposed to the term *minorities* without the descriptors. This will better reflect the current literature.

Overview of Proposed Study

Chapter Two details two integrative literature reviews to support this proposal. The first review investigated the current literature regarding reasons individuals choose nursing and if there were any identified differences between those from diverse racial, ethnic, or gender backgrounds. Some common themes were identified, though there was a lack of information that helps understand why racial, ethnic, or gender minorities select nursing as a career pathway. The second integrative review collected literature focused on interventions to increase the diversity of nursing education programs. The findings were evaluated to identify types of interventions that might be effective in improving diversity within nursing education programs.

Given the findings of the literature reviews, the gaps in the literature led to the dissertation study that sought to gather information from currently enrolled nursing students to help better understand contributing factors for career decision-making in nursing. A cross-sectional descriptive survey study was conducted to understand the reasons why current nursing students selected nursing as a career pathway, identifying differences among the proposed aims. The *McCord Nursing Career and Educational Decision Pathway Framework* was the guiding conceptual framework for the study to determine if there were differences in the identified reasons for choosing nursing based on the type of pre-licensure program selected (LPN/LVN, ADN, BSN) and differences in personal characteristics. The survey was distributed to students enrolled in programs of nursing (LPN/LVN, ADN, BSN) in selected nursing education programs across the U.S.

CHAPTER TWO: REVIEW OF LITERATURE

The following chapter contains two separate integrative literature reviews conducted to support the overall purpose of this dissertation study. Section one outlines an integrative review to determine the body of literature regarding why students choose nursing, intending to find information regarding students underrepresented in nursing. Section two outlines an integrative review that sought to find interventions used to increase diversity in undergraduate nursing programs in the U.S.

Integrative Review #1: Reasons Why Students Choose Nursing

The purpose of the first integrative review was to understand the current qualitative and quantitative literature regarding the reasons people choose nursing as a career. An integrative review was selected over a systematic review to include both types of research methods.²⁴ The first aim of the review was to describe the reasons U.S.-based nursing students, currently enrolled or graduated from a nursing program, chose nursing. By including both currently enrolled and graduate groups the assumption is that they could all share their reasons for choosing a career in nursing, as a retrospective accounting. The second aim was to examine the literature to determine if there are differences in reasons why traditionally underrepresented enrolled students or nursing graduates select nursing as a career pathway.

Design

An integrative review was conducted using the guidelines and methodology set forth by Whittemore and Knafl to provide structure and replicability.²⁴ This method is widely adopted and provides direction on how to conduct the literature search, data

evaluation, and data analysis. Since this is an integrated review, the protocol was not registered, and institutional review board approval was not needed.²⁴

Search Methods

The initial dates of inclusion were 2010-present (2022) to capture the studies published at approximately the time the IOM released its call to increase diversity in nursing. However, the initial search yielded only one article that met all the inclusion criteria of the review. Therefore, the search was expanded to encompass articles from 2000 to 2020 to increase the catchment timeframe for articles.

Inclusion criteria were: (1) quantitative or qualitative research studies; (2) conducted in the U.S.; (3) investigated reasons individuals chose to become nurses (not limited if currently enrolled or graduated). The search was limited to the U.S. due to differences in the healthcare system and educational setting. Exclusion criteria included periodicals or individual interviews, studies on the perception of nursing, retention of nurses, recruitment of faculty, or career advancement in nursing.

To reduce the potential for bias in the literature search, both the advisory mentor and the university librarian engaged in the search strategy. This search strategy was developed in collaboration with the mentor and university librarian to identify the most relevant research and ensure replicability in the process. The literature search was performed in the Cumulative Index to Nursing and Allied Health Literature (CINAHL) database because it incorporates a broad inclusion of nursing literature. Online resource searches and browsing were not incorporated as a search strategy due to the peer-reviewed criteria of the review. The reference sections of the selected articles were browsed for potential articles that also met the inclusion criteria.

A health science librarian assisted the author in constructing search strings and the search strings were verified and checked by a second research mentor to reduce potential bias and inaccurate reporting. The search was designed to return a pre-determined set of 10 international articles that closely approximated the inclusion criteria. The search was completed using “(choice or choose or reason or reasons or decision or decisions) N5 nursing N5 (career)” where N5 indicates the terms are within 5 words of each other. When the search was conducted, the option to narrow for journal articles was selected.

In the first step, the search was input into the search engine. The titles of the articles were then examined for possible matches of the inclusion and exclusion criteria. In cases where there was some possibility of a match, the abstract of the paper was read. Any articles that potentially met the inclusion and exclusion criteria were selected for full-text review. The full-text review applied the inclusion and exclusion criteria to select the final articles for the review. The research mentor double-checked all processes to limit bias in this process.

The search results were exported to Covidence, a web-based tool to manage literature reviews.²⁵ Covidence records the progress of the review, including the generation of the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) diagrams.

Search Results

The initial database search yielded a total of 1150 results. These results were then exported to Covidence.²⁵ Covidence allows for coordination between team members and records all progress of the review. Of the 1150 citations, 59 duplicate citations were removed leaving 1091 articles to be title screened for relevance. The next step included

title screening and looking for relevant articles. From the remaining 1150 citations, 996 articles were eliminated that were not relevant based on the fact they were not nursing, education, or U.S.-based studies. The remaining 95 articles were pulled for full-text review. One additional article was later determined to be a duplicate and removed. A full-text review was conducted of the 94 remaining articles and 91 were eliminated for failing to meet the eligibility criteria (see Figure A-1: PRISMA Diagram in Appendix).

During data extraction, common elements regarding why people chose nursing were observed throughout each of the four studies. Commonalities between the studies were grouped to identify similarities of cited reasons. To integrate common trends, any reason that was identified more than once was extracted from the final list. The list was verified and checked by the research mentor.

Results

Data Evaluation

Based on the methodological guidelines for an integrative review by Whittemore and Knafl, the four studies selected were evaluated and coded using a 2-point scale (1 for low and 2 for high) for methodological rigor and data relevance.²⁴ All of the studies were included in the review, but the score was weighed in the data extraction and analysis phase of the review. Three studies scored a 2 in rigor and data relevance.²⁶⁻²⁸ In the Zysberg and Berry study, the items for the survey were explicitly made based on the author's assumptions related to a vocational congruence model and hierarchy of needs model without further detail or expansion of the assumptions, reducing the methodological rigor score.²⁹

Study Characteristics

The four studies that met eligibility were carefully examined for specific characteristics and data evaluation and extraction were done by two members of this dissertation team. The studies ranged in dates from 2003 to 2010. Three of the studies were quantitative, cross-sectional surveys.^{26,28,29} One study was a qualitative set of interviews.²⁷ The studies were conducted in nursing programs that were geographically different. The first study was conducted at three nursing programs in North Carolina,²⁸ the second included three programs in the northwestern/midwestern U.S.²⁹, the third was located in a nursing program in the Southern U.S.²⁷, and the last study was conducted at a faith-based private institution in the U.S.²⁶ The sample size for the qualitative method study was 31²⁷, the quantitative, survey-based studies had sample sizes of 131²⁶, 160²⁹, and 495.²⁸ A summary of the articles for this review is included in Table A-1 in the Appendix.

Sample Characteristics

All studies included students enrolled in a BSN nursing program. The articles did not provide specific information regarding student characteristics such as race, gender, ethnicity, SES, or time in the program.

Theory and foundational analysis

Three of the four studies did not overtly list a theoretical model or framework that directed the study suggesting the majority of this literature is atheoretical.²⁶⁻²⁸ The study by Zysberg and Berry used a combined theoretical approach to discussing several theories of career choice in the article. The authors examined the differences between traditional binary gender categories in the reasons the subjects decided to become a

nurse.²⁹ The authors hypothesized that women were more likely to determine that nursing was a good fit for their personality. The theories of career choice by Holland and Roe were used to underpin the study. John Holland's Theory of Career Choice states that individuals choose careers that allow them to be with others who are like them.³⁰ The choice of career is determined by an interaction between the individual's personality and the work environment with a drive to choose an environment that fits their personality type.³⁰

The authors used Holland's theory in combination with Roe's Theory. Anne Roe's Personality Theory states that an individual's career choices will be based largely on the interactions with their parents.²⁹ Roe believed that parent-child interactions would lead an individual to choose professions that are either person-oriented or non-person-oriented.²⁹ Together, the authors used these theories as a basis for an individual's career choices that fit their personality. The personality of the individual and the personality of the profession will match. This congruence between personality and profession influences an individual to choose their career pathway, in this case, nursing.

Maslow's hierarchy of needs was also used in the study to describe the more pragmatic needs of individuals choosing a career.²⁹ In this sense, a career allows an individual to survive due to intrinsic economic factors. It is the hypothesis of the authors that women will be more likely to choose nursing for reasons of personality congruence and men will be more likely to choose nursing for pragmatic considerations. In the end, there was no difference between the genders in choosing a career for personality congruence, but men did choose nursing for more practical reasons.²⁹

Measurement of Career Choice

Each of these studies sought to measure the reasons nursing students in the U.S. chose nursing as a career using investigator-initiated surveys. For the three quantitative studies, the process of item selection for the survey was examined for background and evidence^{26,28,29} In two of the studies, there is no detailed description of the process or rationale that led to the creation of the included items. The authors stated that the origins of the items were based on a review of the literature with no additional information or citation provided.^{26,28} In the article by Zysberg and Berry, the authors explained the development of the items was “based on assumptions of both the vocational congruence model and the hierarchy of needs model,” without a literature search or background relevant to nursing.²⁹ Despite the disparate methods, each study derived a list of reasons individuals choose to become nurses.

Reasons for Choosing Nursing

The data extraction for the reasons people choose nursing resulted in seven main reasons which are shown in Table A-2 (see Appendix).²⁶⁻²⁹ In the three quantitative articles, three reasons for choosing that are practical including job security, job flexibility, income, or career opportunity.^{26,28,29} Notably, within the articles, these three reasons were not highly ranked or weighted as important reasons by the participants.

The remaining factors were 1) the desire to help others^{26,27}, 2) someone having a personal relationship such as a family member or friend that was a nurse or in healthcare^{27,28}, and 3) religious or spiritual reasons that were explicit²⁶ and/or implicit.²⁸ Religious or spiritual reasons noted that nursing is a ‘calling’ or that people felt a sense that they were guided, directed, or predestined to be a nurse.²⁶

Two of the articles identified a relationship with a nurse as a reason for choosing nursing.^{27,28} In the Larsen, McGill, and Palmer study, the influence was described as having a personal relationship with a nurse or a personal experience in healthcare.²⁸ The other included articles did not contain information regarding influencing factors for choosing nursing.

Discussion

This integrated literature found seven reasons why individuals choose to become nurses. The identified reasons include job security, flexibility, desirable income, career opportunities, helping others, a relationship with a nurse, and a calling sometimes referred to as a religious or spiritual calling. The list of reasons provides insight into what draws people to a career in nursing. The following describes four main discussion points from this review. Overall, the list of reasons across studies is not well defined and highlights a lack of understanding of the complexity behind each theme. Based on the findings of the review, the career decision-making process is complex and unique but can provide trends when researchers look for commonalities and themes.

Reasons for Selecting Nursing Based on Career Logistics

Some reasons for selecting nursing as a career were unrelated to the specific professional role of the nurse. These reasons include job security, job flexibility, career opportunities, and income. These reasons were often listed together but it is unclear if they cluster as a group of variables where one is dependent on the other. Job security is typically defined as a low likelihood of someone losing their job.²⁶⁻²⁹ Job flexibility reflects the variety of areas a nurse can work in, both inside and outside a traditional hospital.²⁶⁻²⁹ Career opportunities may be differentiated from security to mean vertical

mobility opportunities within the nursing profession, such as management or administration.²⁶⁻²⁸ Financial compensation is also an identified reason for choosing nursing.²⁷⁻²⁹ These are assumptions without the benefit of explicit definition within the articles. Notably, the reasons of job flexibility, job opportunity, income, and security have little to do with the actual role or job duties of a nurse. These reasons describe the features and benefits of a career in nursing.

Reasons for Selecting Nursing Based on the Role

The reasons for selecting nursing based on the role are also not well-defined. The reasons that include choosing nursing because they know a nurse, citing a religious or spiritual calling, and a desire to help others are more related to the professional role. However, choosing nursing to care for others is most closely related to understanding the role nurses perform. It is unclear if students in these studies who wanted to care for others understood the role of the nurse is more complex than simple hands-on care. In general, most healthcare professions are defined by their care for others so the depth of understanding of the difference between a nurse versus another healthcare profession is unclear.

Differences in Reasons Based on Participant Demographics

One major limitation of the studies reviewed was that no studies compared reasons for selecting nursing based on the demographic characteristics of participants. Although this might be because it was not part of the primary aims of the reviewed studies, the demographics of the participants were not described within the findings. This limits our understanding of why underrepresented students select nursing as a career, limiting our understanding of how to recruit diverse students into nursing programs. In

addition, no studies differentiated reasons for selecting nursing based on the educational pathway (LPN/LVN, ADN, BSN) by underrepresented groups. Knowing if there are differences in why people who select nursing also select the program pathway by demographic group helps to further understand how to better recruit students from underrepresented groups.

Differences in International Healthcare Studies

When weighing reasons for choosing nursing in the U.S. versus international studies, the most common reason for selecting nursing in non-US-based studies for becoming a nurse is a desire to help others.^{31,32} Additionally, international nursing students have higher empathy characteristics than students in other professions.³³ In this review, only two of the included studies indicated that a desire to help others was a reason for choosing nursing, suggesting there could be differences in U.S.-based decision-making for becoming a nurse.^{26,27}

Influencing Factors that Raise Awareness of Nursing as a Career

Awareness of a career can develop due to influencing factors such as personal experience or relationships that connect to people in a specific career. Personal relationships and personal exposure to nursing (e.g., a family member in the hospital) raise awareness of the role of the nurse and the environments in which they work. Personal experiences can highlight job functions, roles, and possibilities. Whether the experiences served to raise awareness, or acted as personal inspiration, they were reported as important in two of the studies.^{27,28} Past experience as a guide for career selection relies on knowledge gained through those experiences and an incorporated

awareness of the role of nursing. Awareness of a career is an important antecedent to career selection.^{34,35}

Current studies tend to focus on the idea of raising awareness as a strategy to recruit more prospective students to a career in nursing.^{34,36-38} For the students in the studies, awareness was raised by self-reported life experiences as opposed to an intervention that focused on raising awareness. It remains unclear if targeted interventions meant to raise awareness have a positive effect on nursing recruitment.³⁸⁻⁴⁰

Limitations

Potential limitations include the complexity of integrating studies of various methodologies that can lead to inaccuracies and bias. Even with the assistance of the research librarian, it is possible studies were missed that met the standards of this study.

Conclusion

Nursing is distinct from other careers in healthcare. Nursing allows a broad range of practice environments and opportunities for career advancement. The main descriptive findings provided a general understanding of why people select a career in nursing. The reasons of job flexibility, opportunity, income, and security are important aspects of a nursing career and indeed differentiate it from other healthcare professions. Gaining some insight into the positive and negative aspects of a career in nursing might better help position nursing with potential recruits.

There was variability between studies on reasons why students selected nursing. In each case, the study and integrated questions were investigator-generated with little context on how items were selected. There were no frameworks discussed that would allow studies to be conducted within that context and expand upon the findings of

previously established findings. Without a framework and established conceptual definitions, there is a lack of comparable measures. The lack of consistent conceptual definitions or unified framework renders replication of these studies impossible.

Although the above descriptive findings are valuable, there remains one critical gap in our understanding of why individuals from different backgrounds choose nursing. The studies made no differentiation regarding race, socioeconomic status, or gender within the study designs or results. When considering the impetus to recruit underrepresented people to nursing, it is important to know if those underrepresented people who have chosen nursing did so for the same, or perhaps different reasons, than the majority groups. Therefore, the current descriptive work lacks sufficient details of how an individual's racial or gender identity influences the reasons for choosing nursing and the educational pathway they select. This remains a significant barrier to the recruitment and potential admission of diverse students to nursing.

Integrative Review #2: Nursing Education Interventions to Increase Diversity

Based on the noted gaps in the descriptive literature regarding reasons students underrepresented in nursing select nursing as a career choice, a second integrative review was conducted to determine if there were any published interventions to increase race and gender diversity in nursing education programs of all types (LPN/LVN, ADN, BSN). The following provides the results from that integrative review conducted as part of a qualifying exam. Therefore, the methods and data extraction were generated as part of that assignment and not vetted by a research mentor. However, the selected search terms and final list for this review were eventually reviewed and verified by the research mentor.

The purpose of the second integrative review was to better understand the current state of the qualitative and quantitative literature regarding the types of interventions used by nursing education programs to increase the diversity of nursing education. An integrative review was selected over a systematic review to include both types of research studies (qualitative and quantitative).²⁴ The aim of the review was to gain a better understanding of the types of interventions that have been tested to increase diversity in programs to determine if evidence exists for potential intervention implementation. A summary of past research provides a more comprehensive understanding of the interventions that have been used to increase the diversity of nursing education programs.

Design

The literature review was structured to be an inclusive integrative review using the guidelines and methodology set forth by Whitemore and Knafl to provide structure and replicability.²⁴ This widely adopted methodology focuses on the literature search, data evaluation, and data analysis. The review protocol was not registered, and institutional review board approval was not needed. To reduce the potential for bias in the literature search, both the advisory mentor and the university librarian engaged in the search strategy after the completed qualifying exam to verify the final data selection and extraction.

Search Methods

The literature search accessed multiple considered online databases, including CINAHL due to its focus on nursing, ERIC, due to its focus on education, SocINDEX, due to its focus on sociological issues, HealthSource: Nursing/Academic Edition, due to its focus on nursing and allied health topics, and Medline to help ensure a wide net was

cast. An initial search on PubMed, hosted through a different database service, yielded 85 returns, none of which were relevant. The search terms were determined after a process of trial and error to maximize relevant returns and minimize the number of records to screen. The final search terms included (*nurse OR nursing OR nurses*) AND (*diversity OR minority*) AND (*school OR education OR program*) NOT *faculty*.

The dates of inclusion were 2015-present (2021) to capture the most up-to-date research. Included articles were to have been conducted in the U.S. because the U.S. was the focus of the IOM statement on enhancing diversity in nursing practice. Included articles must be peer-reviewed primary research that, in whole or in part, included and evaluated an intervention to increase diversity in one or more nursing programs. The included studies could be quantitative or qualitative in study design. Exclusion criteria consisted of articles that focused on increasing racial and ethnic minority nursing faculty, advanced education, and perceptions of nursing by groups underrepresented in nursing.

In the first step, the search was input into the search engine. The titles of the articles were then examined for possible matches of the inclusion and exclusion criteria. In cases where there was some possibility of a match, the abstract of the paper was read. Any articles that potentially met the inclusion and exclusion criteria were selected for full-text review. The full-text review applied the inclusion and exclusion criteria to select the final articles for the review. The research mentor double-checked all processes to limit bias in this process.

The search results were exported to Covidence, a web-based tool to manage literature reviews.²⁵ Covidence records the progress of the review, including the

generation of the PRISMA diagram. The research mentor for this project collaborated on the procedures and outcomes for this review.

Search Results

The initial search produced 1501 studies where 74 duplicates were removed. The remaining 1427 articles were screened for relevance through a title search. Based on the title search, 1397 articles were eliminated that were not related to nursing, education, or intervention studies. The remaining 30 articles were included in a full-text screening. Using the inclusion criteria, 6 articles were selected for review. Later, a seventh article was identified and included in the review based on a secondary search of relevant references from an article. The PRISMA diagram for the second review can be found in Figure A-2 (see Appendix).

All seven articles described interventions relating to nursing education that were intended to increase diversity within the baccalaureate of nursing science education programs (BSNP). Most of the studies included interventions organized by BSNPs and aimed at directly increasing diversity.⁴¹⁻⁴⁶ One study analyzed the impact of governmental legislative efforts to increase diversity in baccalaureate nursing programs.⁴⁷ A representation of all the studies can be viewed in Table A-3 (see Appendix).

Data Evaluation

In keeping with the guidelines established by Whittemore and Knafl, the included articles were evaluated on rigor and review relevance.²⁴ It was apparent during the article screening process that the articles were heterogeneous in terms of scope, methods, and reporting. One of the articles included was a clear outlier and did not resemble the others in any way other than meeting the inclusion criteria. To allow for differentiation in the

included categories of rigor and review relevance, a scale of one to three was chosen. A one to three (one indicated lowest and three indicated highest) scale was selected to allow for some differentiation while attempting to minimize the potential bias of reviewers. Rigor was evaluated for validity, methods, outcomes, and available conceptual definitions. Relevance evaluated the study and its relationship to the purpose of the review. The total scores ranged from three to six. No article was excluded from the review on the basis of score. The results of the data evaluation are in Table A-4 (see Appendix).

Results

Demographic Characteristics

The following includes the basic demographic characteristics of the selected studies. The included studies noted sample sizes ranging from 14 to 392, with the majority of studies having greater than 30 participants.⁴¹⁻⁴⁷ Geographically, the studies were conducted in Missouri⁴⁵, California⁴³, and Michigan⁴⁶, with three studies within North Carolina.^{41,42,44} One study was multi-state and included data from 14 states.⁴⁷

With the exception of the Travers, Smaldone, and Cohn study, six studies involved researcher-generated interventions conducted within their specific educational institutions aiming to improve diversity.⁴⁷ Five of these studies were conducted in public institutions of higher learning, and one study was performed within a private university.⁴⁵

Funding sources were noted in most of the interventions. Of the seven reviewed studies, six sought direct action to increase the diversity of nursing in the program. Of those six, all of them utilized grants to fund the interventions, four of them through the

Health Resources and Services Administration (HRSA).^{41,42,44,45} In each of these, the funding was available for three years.

Definition of concepts/diversity

Each of the seven studies describes an intervention or program aimed at increasing diversity in nursing using the concept of diversity as a central goal within each study. However, the conceptual definition was not consistent and in three of the studies the term used ranged from “underrepresented ethnic minorities,” to “underrepresented economically disadvantaged race/socio-economic status/location,”⁴⁶ to “racial minorities.”^{44,46,47} The other four studies did not define diversity, either explicitly or implied.^{41-43,45} Notably, all of the studies included racial identity as an aspect of diversity in nursing, but some took a broader view, also identifying socio-economic status, location (rural), and gender.

Examination of Design, Validity, and Fidelity

The design of each study was not explicitly stated. No studies included a control group nor had any randomization of participants. An examination of validity evaluates the match between the outcomes and the stated purpose of the intervention study. Within the seven studies, three outcomes matched the stated purpose.^{41,43,47} In the remaining four articles, the stated purpose was often the increase of diversity in nursing, but the primary aims of the intervention were not explicitly noted. No outcome data in any of the seven studies included demographic comparisons of participants within the outcomes. One study sought to improve retention within the nursing program using the intervention but did not provide comparison data to fully evaluate if outcomes matched the primary aims of the intervention.⁴⁶

Fidelity was not discussed in any of the studies. No articles discussed whether the intervention was delivered in a systematic manner.

Setting and Funding

Most studies implemented interventions at the university or nursing program level, using direct intervention on student education to meet their study aims.⁴²⁻⁴⁶ The actions taken in these five studies had many similarities, with direct educational interventions focused on improving admission and retention of nursing students (see Table A-5 in Appendix). One took place at the secondary education level and focused on recruitment to nursing.⁴¹ The final article contained an examination of legislation targeted at improving diversity to determine the effectiveness of these measures.⁴⁷ Some of the actions required a direct disbursement of funds to hire personnel or to grant scholarships for students.

A common thread through the studies is the need for funding programs that attempt to increase diversity. Each of the programs operated under grant funding. Scholarships were often used to support program participants.^{42,44-46}

Types of Interventions

The interventions evaluated were separated by their emphasis which included recruitment, admission, retention, and legislation regarding nursing education. For recruitment into nursing programs, studies shared interventions aimed at increasing awareness and preparedness for students prior to entry into a nursing program. One study used strategies to raise awareness in high school, aimed at providing experiential and exploration activities to create interest in nursing.⁴¹ In another study, pre-nursing tutoring was shown to increase admission rates.⁴⁴

Five studies used the deployment of retention strategies such as pre-entry preparation, tutoring, mentoring, scholarship, and targeted advising, specifically for at-risk students.⁴²⁻⁴⁶ Mentoring, especially peer mentoring, was highlighted as something the students felt they benefited from in the article by Craft-Blacksheare.⁴⁶ The same study also highlighted the positive impact that scholarships had on students.⁴⁶ Hiring a retention specialist was found to be effective and something the BSNP elected to continue after outside funding ended.⁴⁵

Theoretical Analysis

Only one of the six studies included a theoretical model to guide the program intervention. Jeffreys's NURS model describes the complex interactions, or factors, that influence nursing students and their success or failure.^{44,48} These interactions are dynamic, and the results are multi-factorial. Factors in the framework model include environmental factors, academic factors, professional integration factors, outside surrounding factors, student characteristics, and student affective factors. Each factor acts upon nursing students and positively or negatively affects success in a BSNP. These factors form a framework for "understanding the multi-dimensional process of student retention and success."⁴⁸ A clear understanding of the factors can help determine modifiable factors within the model. No additional articles made mention of any theoretical, conceptual, or framework foundation.

Measurement of Primary Outcomes

In the seven studies, the measurement of the main outcomes was widely variable across each. No studies used the same primary outcome indicators of increased diversity to quantify primary outcomes of increasing diversity in nursing programs. How the

primary outcomes were quantified was based on the type of intervention delivered (pre-admission, during program progression and retention, and changes to policy through legislation). Because the interventions were vastly different, the outcome metrics presented were specific to the type of program delivered and slightly different across all studies. However, some themes emerged as noted in the above section ‘types of interventions.’ For pre-nursing admission programs, increased interest in the nursing profession was measured using program satisfaction rate.^{41,49} Three studies focused on pre-nursing students in pre-nursing courses, and the main outcomes were noted by the number of students that progressed from pre-nursing to nursing programs study or admission rates.^{43,44,47} Interventions that were conducted during a nursing program used retention rates using progression within a program and GPA,^{42,44,49} student satisfaction for interventions conducted during a nursing program,⁴⁴ graduation rates,^{42,46} National Council Licensure Examination (NCLEX) pass-rates.⁴⁶

Discussion

The following summarizes the findings of the second integrated review of interventions to increase diversity and addresses the remaining understanding of how to increase diversity in nursing education programs. There are five main areas of discussion for this section.

Types of Interventions

The types of interventions varied significantly across studies. The interventions reviewed were categorized into three main phases: recruitment, admissions, and retention of potential and current students. Each of these phases is a prospective setting to increase and graduate diverse students from nursing programs.

Two studies included recruitment strategies to increase diversity in a nursing program. These two studies used the high school environment to raise awareness and create a positive perception of nursing as a career choice.^{41,49} Although it was rated as positive by the participants, there was no data to indicate if the intervention achieved its aim of recruitment.⁴¹ The aim to increase awareness of nursing as a career choice is common in the literature.^{36,37} Awareness of a career choice is considered one of the antecedents to choosing a career.⁵⁰ Taking deliberate action to increase awareness is a logical step to attempt to increase awareness. However, it remains unclear if the recruitment of high school students has any impact on the admission of those same students.

Admission interventions took the shape of preparing students for application and entry to the nursing program. Four studies included this intervention.^{42-44,46} The purpose of these interventions was to increase the chance of admission to the relevant BSNPs.^{42-44,46} While these strategies were effective at helping the participants increase their grades or gain admission to the nursing program, there was no evidence that the overall diversity of the admitted students was increased.^{42-44,46}

Retention was the most frequent focus of the studies, with mentoring of students in four studies,^{42,44-46} tutoring in two,^{44,45} and the use of a retention specialist in one.⁴⁵ Each of these interventions was aimed at keeping the student enrolled and progressing through the program. Retention is an important factor in conveying students underrepresented in nursing to graduation.⁵¹⁻⁵³ Underrepresented students often have poorer program retention than their counterparts.^{17,19,53,54}

Scholarships were a common intervention strategy. Scholarships were provided to promote entry as well as enhance retention in BSNPs. Four studies used this method of intervention.^{42,44,46,49} The Craft-Blacksheare study specifically mentioned the importance of the scholarships to the study participants.⁴⁶ As a single intervention, scholarships seem appropriately regarded as both an admission and retention intervention.

One study took a much different approach by evaluating the effects of public policy changes on diversity enrollment in BSNPs.⁴⁷ Although the study investigators found that policies aimed at improving diversity in nursing had a positive effect, given the variability of state policies within the U.S., generalization is limited. The variability of these recruitment approaches makes it difficult to translate into an institution without doing needs assessment of the community to determine which recruitment approaches are best matched with the local area.

When comparing the above types of interventions used in the nursing programs to non-nursing career literature, most studies attempting to increase diversity within an educational program show using any of the above interventions tend to increase enrollment and retention within a career.⁵⁵ Studies in higher education of varying degree paths have found a need to offer financial support to underrepresented students. More research is needed to clearly understand the extent of the need and implications on recruitment and retention.⁵⁶ Two separate reviews indicate holistic admission shows promise for admission of underrepresented minorities into healthcare fields.^{56,57} Conversely, a review of higher education science and technology degree programs was unable to clearly identify interventions that increased underrepresented minority program

retention.⁵⁸ While work continues, there remains considerable uncertainty in exactly how to improve diversity in higher education.

Design Limitations

Overall, all reviewed studies had design limitations. Only one of the articles described the pre-existing evidence to support their intervention.⁴⁶ In the rest, there was no description of the evidence used in the selection of the methods employed in the various programs. While common sense often agrees with the methods used, the articles do not establish precedent or foundational work from which they built the interventions. Recalling that both the NLN and AACN directed the need for increasing diversity without offering specific direction, it follows that there is a lack of unified direction among the studies.^{13,14}

Since the studies were non-experimental in nature, there was no randomization into experimental or control groups. Even without a control group, there were no comparisons to previous performance in terms of recruitment, admission, or retention of underrepresented nursing students. Only two studies shared if their interventions increased recruitment, admission, or retention to any degree. None of the studies provided any outcome data that demonstrated specific interventions to increase program diversity. This is a problem because it leads to a lack of clear data demonstrating the relative effectiveness of either the individual interventions or of the interventions when considered together. The studies appeared to be quality improvement in nature, which is defined as process improvement rather than primary research. Without a more methodical approach, the findings are not generalizable to a broader educational system or program.

Due to the lack of detailed outcome data, it is not possible to know which interventions are effective in meeting the goal of increased diversity. Because of the lack of details in the reviewed studies, additional studies are needed to better understand the fidelity of new interventions that could be appropriately deployed to the end goal of increasing the diversity of students in nursing programs. To create these interventions, additional descriptive work is needed to better understand the career decision-making process, facilitators of decisions to be a nurse, and barriers for underrepresented racial and gender groups.

The studies were also atheoretical with no guiding model or framework that could be used to understand the relevant concepts of increasing diversity in nursing programs. Repeatable methodologies and reporting are also necessary to allow for some degree of transferability to other programs seeking to adopt interventions aimed at improving diversity. Interventions were only done in BSNPs. There were no identified studies that focused on ADN and LPN/LVN programs. Notably, ADN and LPN/LVN programs are more diverse, in terms of racial and ethnic diversity, than BSNPs.^{5,59,60}

Setting and Funding

Given the lower socio-economic status of racial and ethnic minorities in the U.S., it is likely that the use of scholarship funding is integral to the retention of minority students in BSNPs. Grants can supply the initiation of a program but will not support its long-term use. For each of these programs, grant funding sustained three years of interventions. Funding is necessary to initiate and maintain a recruitment and retention program within BSNPs.

Outcomes of the Studies

Of the seven BSNP interventions, all of the articles explicitly stated the ultimate goal of study findings was the need to increase the diversity of the nursing education programs in order to ultimately increase the diversity of the nursing workforce.⁴¹⁻⁴⁶ Each of the programs delivered was designed to increase the recruitment and/or retention of underrepresented minority students. However, none of the seven articles provided data that showed an overall increase in diversity of underrepresented students in their program.

Moreover, none of the studies shared data to indicate that there was improved retention within a BSNP for underrepresented minority students. While implied in the discussions of the articles, data metrics were not included that would have allowed for quantifiable observation of differences within the interventions. This omission threatens the fidelity of each of the studies and is a direct and significant threat to internal validity and overall understanding of potential impact. Since the studies lacked a conceptual framework and evidence as a rationale for the intervention development, the ability to translate the interventions based on the outcome data is minimal. Furthermore, other BSNPs interested in following the interventions are unable to determine which interventions could be most effective in increasing diversity.

The lack of consistent outcome data in the articles means a quantitative comparison of interventions is not possible. The lack of quantitative data throughout most of the studies presents a notable gap in knowledge and a significant limitation for the conducted review. Despite that, all the articles described the interventions as positive.

Future directions

Future research should include metrics to identify whether the interventions increased the diversity of racial minorities above expected levels when compared to past performance. Future research should also be done to determine the relative effectiveness of various diversity-focused interventions. Comparisons of cost, efficiency, and effectiveness of the identified interventions can help future BSNPs know how and where to direct resources that are often limited.

A career decision-making framework needs to be created that accounts for elements matching skill sets, aptitudes, and personality, as well as an examination of personal priorities and goals that considers the influence of factors like work-life balance, financial support, and motivation. Individuals must weigh their congruence to a career with the outside factors that are also important. Recruitment of racial minorities to nursing cannot counterbalance all the outside factors but may be able to support academic preparedness (skills) and offer some financial stability in the form of scholarships. Personal congruence to nursing as a career fit is a vital consideration and one that can be addressed by raising awareness of nursing as a profession and career choice.

The study by Travers, Smaldone, and Cohn illustrated the importance and effectiveness of political action to increase diversity in nursing.⁴⁷ This information is relevant to those who work in or around politics, including professional organizations. The study emphasizes the value of belonging to professional nursing organizations that work to promote diversity in the profession. There are multiple U.S. organizations representing traditionally underrepresented nursing populations, like the National Coalition of Ethnic Minority Nurse Associations, the National Black Nurses

Organization, the American Assembly for Men in Nursing, and the National Association of Hispanic Nurses. These organizations have a vested interest in affecting policy changes that improve the diversity in nursing education.

While raising awareness of a nursing career to potential recruits seems like a reasonable strategy, none of the three studies that used this method provided data to support this intervention.^{41,44,45} In these instances, the actions taken were found to be effective for student success.^{45,46} Pre-entry preparation of students, tutoring, mentoring, and advising require a financial commitment from nursing education programs but may be achievable on more limited budgets.

Conclusion

Interventions for increasing diversity lack rigorous research methods to base possible implementation into other nursing programs. Increasing the diversity of the nursing workforce has been a shared goal amongst the healthcare community for many years. A necessary first step is to recruit and retain underrepresented minority students to nursing programs to feed into the workforce. Identified strategies for increasing diversity in nursing programs center on specific strategies like raising the awareness of nursing, increasing pre-entry preparedness, tutoring, mentoring, scholarships, and targeted advising.

Funding is an integral component of any diversity-oriented program. Financial support is needed to start and maintain programs aimed at increasing diversity in nursing education. Scholarships specifically address the low socio-economic status of many under-represented minorities.

Summary of Chapter Two

Due to the limitations noted within both integrative reviews, there are several opportunities for future research to better understand how to increase the diversity of the nursing education programs which would then increase diversity in the workforce to mirror the population at large. Based on the gaps in the two integrative reviews, it was determined that better statistical approaches were needed to understand why students from underrepresented populations select nursing as a career option. Once basic descriptive data is obtained, diversity-oriented interventions can be developed using conceptual frameworks for better-designed interventions that can lead to broader adoption in nursing education.

CHAPTER THREE: METHODOLOGY

To create a more diverse nursing workforce that includes underrepresented groups (racial and ethnic minorities and men from all backgrounds), identifying the reasons why people select a career in nursing is critical. Furthermore, once the decision to be a nurse is made, understanding why people select a specific educational pathway in nursing also provides data that could better delineate the career decision process. There are no current descriptive studies that focus on depicting the characteristics of students and factors of the career decision-making process in pre-licensure nursing programs (LPN/LVN, ADN, BSN). This information is foundational in the understanding and development of future interventions that better incorporate tailored messaging to underrepresented groups that could lead to an increase in applications and enrollment into nursing programs.

Therefore, the purpose of this dissertation study was to conduct a descriptive survey study of current nursing students from three main types of pre-licensure nursing programs (LPN/LVN, ADN, BSN) to better understand the demographic characteristics of current students, to better understand the reasons or contributing factors for selecting their current educational pathway, and to determine if there were group differences among the various factors. The study used an investigator-generated online survey that allowed current nursing students to retrospectively provide reasoning for their current educational pathway.

The study included the following four research aims:

1. Describe the characteristics of age, race, ethnicity, gender, socioeconomic factors, and educational background among the students enrolled in a pre-licensure

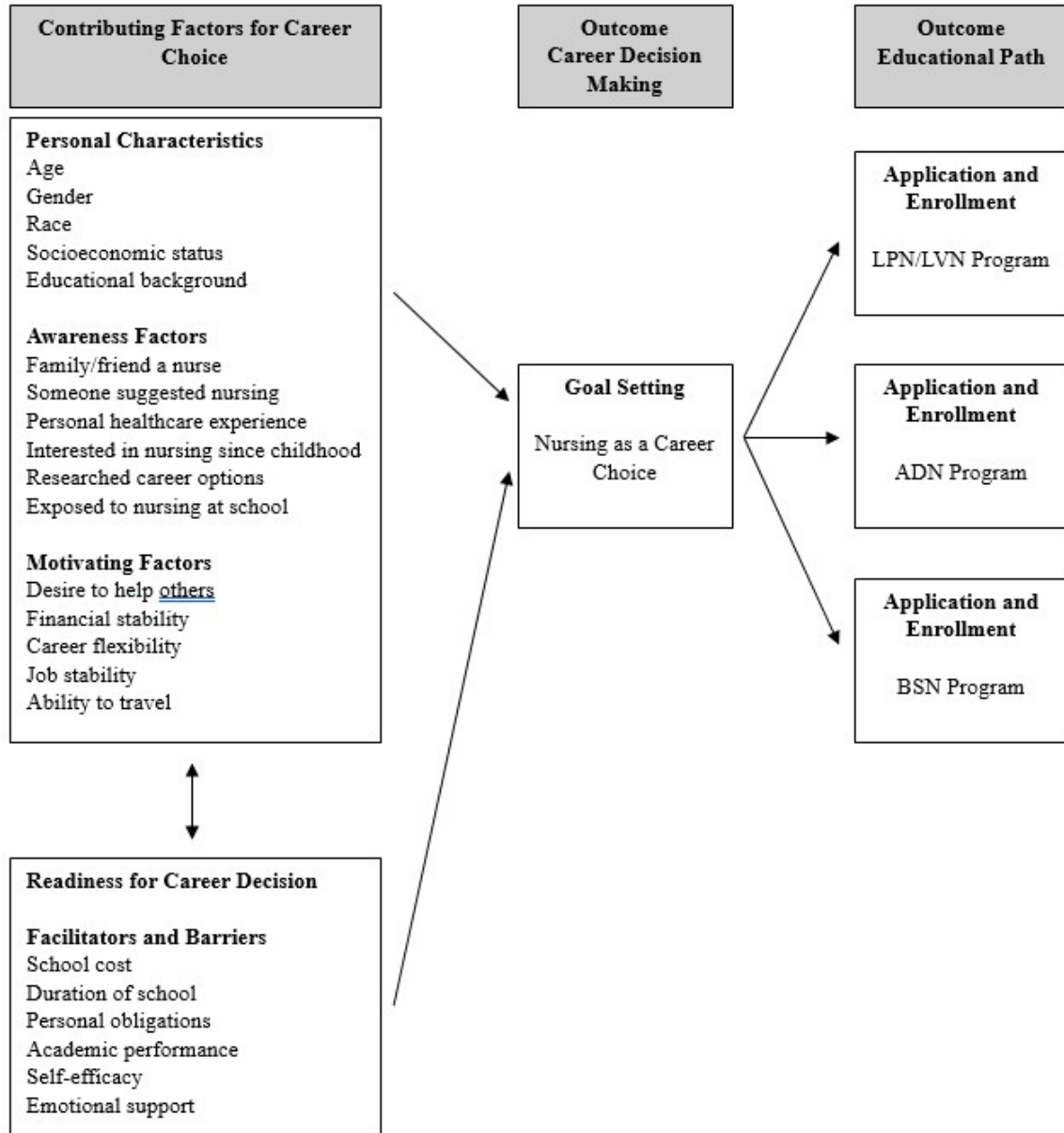
- nursing program and determine if there are significant differences among groups by program type (LPN/LVN, ADN, BSN).
2. Describe the awareness and motivating factors for the selection of a pre-licensure education program (LPN/LVN, ADN, BSN) and determine if there are differences by program type (LPN/LVN, ADN, BSN).
 3. Describe readiness for career decision factors such as facilitators, barriers, self-efficacy, and emotional support by type of nursing program and determine if there are significant differences in these factors by program type (LPN/LVN, ADN, BSN) and race.
 4. Explore the predictive factors (personal characteristics, awareness, motivation, readiness for career decision) in determining the LPN/LVN vs RN (ADN and BSN) educational track.

Framework

The *McCord Nursing Career and Educational Decision Pathway* framework guided the study. The framework was constructed using data from literature reviews and relevant concepts of the larger research literature on social cognitive career decision-making. The framework is illustrated in Figure 3.

Figure 3

McCord Nursing Career and Educational Decision Pathway Conceptual Framework



The framework was constructed using concepts from the social cognitive career theory model of a person, as well as contextual and experiential factors affecting career-related choice behavior.⁶¹ The model by Lent accounts for integral concepts such as interest in a career, personal characteristics (e.g., gender, race, ethnicity), awareness and

motivating factors, readiness for the career decision, and outcomes of career decision.⁶¹ The framework was adapted for the specific purpose of the nursing career pathway concerning the decision to make nursing a career goal and, thus, apply and enroll in a program of nursing.

The framework has two main decision points to describe the process of selecting nursing as a career pathway. The first decision point is setting nursing as a career goal where contribution factors such as personal characteristics, awareness of nursing, motivating factors to be a nurse, facilitators, and barriers contribute to the decision-making process. The second step includes the evaluation of nursing educational pathways that lead to applying and enrolling in one of the three nursing education program types. The main focus of this study was to start with surveying students currently in a nursing educational program with the assumption that the goal was set and actualized. The following provides additional details of the overall framework.

Contributing Factors or Reasons for Nursing as a Career

The reasons for selecting nursing as a career are concepts that describe discrete aspects of the individual, relative to career decision-making through the selection of a program of nursing (LPN/LVN, ADN, BSN). In a literature review, Gati outlined the concepts of the career decision-making process which included personal characteristics and career readiness.⁶²

The concept of readiness describes a level of preparedness in managing barriers throughout the career decision process and includes sub-concepts of career beliefs, self-efficacy, and willingness to engage in career decision-making.⁶² Bandura's Social Cognitive Theory describes self-efficacy as "the belief in one's capabilities to organize

and execute the courses of action required to manage prospective situations.” Self-efficacy describes a person’s ability to meet challenges confidently.⁶³

Personal Characteristics

The personal characteristics in the framework are based on the Social Cognitive Career Theory created by Lent.^{61,64} Lent describes the process of career choice as an interplay of the individual’s culture, environment, interests, expression of a choice, actions toward goal attainment, and subsequent performance.^{61,64} Even in Lent’s outcomes, the overall understanding of the characteristics of nursing students and how that contributes to nursing career choices in the various programs is underdeveloped within the research literature.^{61,64} There was no identified literature that presented what personal characteristics such as age, gender, race, socioeconomic status, and educational background can potentially influence the decision-making outcome of selecting nursing as a career. Therefore, the included list of characteristics will provide new information regarding demographics and personal characteristics of nursing students in the various program pathways.

Awareness Factors

Awareness factors are described as the factors that raise awareness of a career choice and may serve as a conduit to career recruitment. Career awareness is an important antecedent to career choice.^{34,35} Factors identified in the literature review in chapter two include different types of exposures to healthcare or healthcare careers.^{27,28} Personal health experiences have been shown to be predictive of choosing a career in healthcare.⁶⁵ Interventions such as educational sessions to raise awareness for prospective nursing was also a common strategy.^{41,49} These awareness factors were also included

having a family member or friend who was a nurse, a personal experience within healthcare, job fairs, or education about careers.^{27,42,45} The framework reflects the factors in the literature, including potential awareness factors relevant to a career in nursing.

Motivating Factors

Motivating factors represented in the framework are intrinsic factors or internal factors that motivate people to choose nursing as a career. Intrinsic motivators have been found to be significant predictors of selecting health science careers for racial and ethnic minorities.⁶⁶ The literature review in chapter two identified intrinsic factors that led individuals to choose nursing and include 1) desire to care for others, 2) financial reasons, 3) the ability to travel, 4) career opportunities, and 5) flexibility of the career.

Readiness for Career Decision

Facilitators and Barriers of Nursing Career Choice

Facilitators and barriers were noted as being part of the decision process when making a career choice.⁶⁴ In the career choice literature, a person weighs a list of perceived facilitators and barriers when deciding to move forward to an action plan (e.g., application to a nursing program).^{30,38,64} In lay terms, these are the ‘pros and cons’ people weigh in determining if they can actualize their goal of moving forward. The listed items included in the survey were derived from a mix of nursing and career decision-making literature.^{36,50,61,65,67–69}

The presence or absence of social and emotional support from friends and family is an important factor in career choice and progression.^{70,71} Positive support is correlated with greater success and improved career choice. Social and emotional support can be both a barrier and a facilitator, depending on its relative presence or absence.^{70,71}

Post-secondary education is an elective expense and different schools set their own tuition. In higher education, the cost increases at any institution increases with an increase in program duration. Economic factors are a known barrier to students seeking to pursue a degree.⁷² This effect was considered in the scholarships that were given to defray the cost of education in the review of the previously considered intervention studies.^{42,44,46,49}

Related to the economic impact, the duration of the educational program may be a factor in the decision-making process. It is known that Black/African American students make up a significantly higher percentage of LPN/LVN nurses than RNs.^{15,73} No identified literature has fully explored the reasons for this trend. While the decisions may be related to school costs or some other unknown factor, the difference between 12 months for an LPN/LVN program and two to four years for ADN or BSN programs should be considered.

Previous academic performance may also play a role in selecting a nursing educational pathway. Certainly, educational attainment has a significant impact on available educational opportunities.⁷⁰ Previous educational performance may be a barrier to entry to more desirable nursing educational pathways.

Family obligations can be a barrier to the career decision-making process.⁷⁴ Time commitments that are inflexible may limit the individual's ability to act freely in regard to career decisions.⁷⁴ Presumably, it can also be a factor when deciding which nursing educational pathway to pursue.

Self-efficacy is an important concept that describes an individual's self-esteem and their belief in their ability to attain their goals. Self-efficacy is an important variable

related to the ability to adapt and overcome stress and obstacles to achieving one's goal. The individual's social and psychological health plays an important role in forming their level of self-efficacy.⁷⁵ Within the context of career goal attainment, an individual's measure of self-efficacy can influence the outcome and attainment of career goals.

Career decision-making is also more difficult for those without perceived social support and autonomy to make those decisions.⁷⁶ For racial and ethnic minorities, common career barriers include financial constraints and racial discrimination, as well as ethnic and gender discrimination.⁷⁷

Perceived career barriers may prevent an individual from ever considering a career, or after consideration, deciding to pursue another career path. For those with high levels of perceived social support, financial agency, and adequate self-efficacy, there are more educational opportunities.

Methods

The following section describes the methods that were used to answer four research questions for this dissertation study. The study used an investigator-generated descriptive survey distributed to U.S.-based nursing programs that delivered at least one or more of the three educational pathways, aiming to include schools with racial and ethnic diversity and geographical heterogeneity.

Design

A cross-sectional research design using a convenience sample was used. Data was collected using a quantitative survey where enrolled students provided retrospective responses to survey items.

Sample Criteria

Students from U.S.-based schools of nursing currently working toward their LPN/LVN or RN (ADN or BSN) degree were eligible for this study. No restriction was placed on the type of educational institution (non-profit versus for-profit), however, that level of descriptive data was collected in the demographic questionnaire. Students were eligible to participate if they were currently enrolled in one of the three programs (LPN/LVN, ADN, BSN).

Students were identified as participants because they had made the choice to become nurses. Since participants are being asked to retroactively share factors relating to their career decision-making, nursing students have more recently made the choice and can be assumed to have more accurate recall than potential participants who made those decisions and experienced those factors some number of years prior. Temporally, student nurses are in closer proximity to the decision-making process than post-licensure nurses or post-licensure nursing students. Students in post-licensure RN-BSN were excluded since these programs are degree completion programs for currently practicing nurses. Students in direct entry pre-licensure to master's in nursing (MSN) programs were excluded due to a relatively small population size.

A master list of schools was identified through online searches. Each region of the U.S. was explored. The goal was to identify schools that were representative of all types of programs (LPN/LVN, ADN, BSN). The schools contacted included historically black colleges to ensure a broad reach of Black/African American students were included in the potential sample. It was anticipated that through regional sampling most demographic groups would be captured to obtain a representative sample.

An initial screening question ensured the participant met the inclusion criteria as a nursing student. One question identified the type of nursing program (LPN/LVN, ADN, BSN). If a student selected RN-BSN program, the survey ended with a message about ineligibility and thanked the student for their time.

Procedures

Investigational Review Board Approval

Before data was collected, the project was submitted for approval via the Human Research Protection Program at Indiana University-Purdue University Indianapolis (IUPUI). Exempt status was granted due to the nature of the study procedures as there was minimal risk for participating, thus, written consent was not required due to the low-risk nature of this study. A one-question assent to participate was obtained at the beginning of the survey.

Recruitment

Once IRB approval was received, a convenience sample of students from U.S.-based schools of nursing consisting of undergraduate nursing students was assembled. An email requesting distribution was sent to available faculty or program contacts of identified nursing programs. The request included information about the study including the primary goal. A copy of the IRB review outcome (exempt status) and survey were sent with the email.

The final list of email addresses contained faculty or staff contacts for 110 separate U.S.-based nursing programs. The emails were obtained by either directly accessing the program's webpage or through the state boards of nursing, some of whom publish email contacts for nursing programs. The first email request to the 657 contacts

requesting the information be sent to the students was sent on February 13, 2023.

Program contacts that agreed to distribute the survey to students were asked to send the study information using the IRB reviewed information. The instructions requested the invitation be resent up to three times. The last email request to a school of nursing to request student participation was sent on May 5, 2023. This date was selected based on the sample size needed to analyze the four aims of the study.

Initially, the distribution was handled through a software marketing company, Constant Contact™. Due to poor response rates after the first few weeks of distribution, the emails were personally sent from the doctoral students' email instead of Constant Contact™. A manual email distribution to all of the non-responders was sent every 1-2 weeks. For those who agreed to distribute the survey, personalized thanks were sent, and a follow-up request to redistribute every two to three weeks was made. Throughout the course of the study, the master email list was added to and reached a total of 657 addresses by April 25, 2023.

Data Security and Storage

The survey data was collected using a web-based survey platform, Qualtrics™ (Qualtrics XM, Provo, UT) where survey responses were saved as a part of a shared project with the dissertation mentor. Qualtrics is a secure, online survey platform that is part of the IUPUI campus software free-for-use package. Data reports were securely stored in the same location as the Qualtrics™ program. There were two considerations of privacy reviewed and part of the IRB exempt status. First, the study did not collect personal health information (PHI) information or personal student identifiers. The second consideration was the Family Educational Rights and Privacy Act (FERPA) as recruited

current students were enrolled in an academic program. However, since students agreed to provide de-identified data and did not provide any detailed academic information, there were no anticipated FERPA concerns that would impede their privacy with collected data.

Data was stored using secure data storage created by the student and dissertation mentor. Survey responses from Qualtrics were exported into a Microsoft ExcelTM worksheet when the study was complete. All Excel spreadsheets were stored in the IUPUI secure Microsoft 365 TeamsTM platform using the highest security settings. Only the student, dissertation chairperson, and one additional dissertation member have access to the data.

Measures

Personal Characteristics

Sample characteristics were measured using a set of categorical demographic questions including age, gender (male, female, non-binary, other), racial identity (Native American, Asian American Pacific Islander, Black/African American, Hispanic, White, Two or more races, Prefer not to answer), socioeconomic status, living in rural/suburban/urban settings, and educational background (see Appendix for the detailed survey).

Awareness and Motivating Factors

The awareness and motivating factors were measured using investigator-generated items that included questions with categorical and five-point Likert scale item responses. Seven awareness questions and seven motivating factors questions were included in this section. Items were created based on the first literature review and sought

to gain a better understanding of the external factors that exposed the individual to nursing as a career choice. Awareness factors of having a nurse family member or friend, having a friend who is a nursing student, personal healthcare experience, researched option, wanting to be a nurse since childhood, someone suggested nursing, and learning about nursing at school were listed individually in items, with potential answer ranging from 'Not at all important' to 'Extremely important.' The motivating factors of wanting to help people, nursing as a first career choice, good pay, flexible hours, advancement opportunities, job security, and the ability to travel were listed as five-point Likert scale items, ranging from 'Strongly agree' to 'Strongly disagree.'

Facilitators and Barriers

Facilitators and barriers items included questions regarding concepts that have been presented in past studies such as cost and duration of the selected nursing program, personal obligations, and prior academic performance using five-point Likert scale item responses (Strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, strongly disagree). Items were derived from previous literature and the larger information gathered in the general career decision-making literature.^{37,50,61,64,78} Each question was worded to ascertain if the item helped or hindered the decision for the selected program.

Self-efficacy

Self-efficacy was measured using the Patient-Reported Outcomes Measurement Information System (PROMIS) General self-efficacy short form 4a v1.0.⁷⁹ This is a HealthMeasures sourced tool that was developed for use in research and funded by the National Institutes of Health. The short form was derived from the full 10-item form and

the 4 questions were specific to capture one's confidence in accomplishing goals. The HealthMeasures Scoring Service was used to facilitate automatic scoring of each student's responses using 'response pattern scoring.'⁸⁰ The program summarizes each score to the five-response options (one to five) finding the total raw score and summarizing the total score. The range of possible scores is four (lowest) to 16 (highest). The raw score is then used to find a T-score for each participant using a conversion table which produces a standardized score with a mean and standard deviation. Scoring is available directly from HealthMeasures and results were entered into IBM Statistical Package for the Social Sciences (SPSS). Since the questionnaire was developed and used in clinical science research, a Cronbach's alpha was repeated for this study to establish reliability in this population. Prior studies have reported acceptable reliability in the range of 0.56-0.75 in adult populations.⁸¹

Emotional Support

Emotional support was measured using the PROMIS Emotional Support short form 4a v2.0.⁸² This instrument is a HealthMeasures sourced tool that was also developed for use in clinical research and funded by the National Institutes of Health. The four-item form is a shorter version of the original 10-item form, and the four questions are specific to capture one's emotional support. Scoring for this questionnaire utilized the HealthMeasures Scoring Service as the automatic scoring calculates subject responses using 'response pattern scoring'.⁸⁰ The program summarizes each score to the five-response options (one to five) finding the total raw score and summarizing the total score. The range of possible scores is four (lowest) to 16 (highest). The raw score is then used to find a T-score for each participant using a conversion table which produces a

standardized score with a mean and standard deviation. Scoring is also available directly from HealthMeasures and results were entered into SPSS. There was no literature found that has used this questionnaire within a student population, therefore Cronbach's alpha was completed to verify reliability within this population. Prior literature has shown adequate reliability with Cronbach's alpha ranging from 0.99 in the original psychometric evaluation.⁸²

Statistical Plan

The four aims were analyzed using descriptive statistics including frequency distributions, means and standard deviations, Pearson's chi-squared test, one-way analysis of variance (ANOVA), and logistic regression. Statistical analyses were used based on the appropriate level of measurement of the dependent and independent variables within each research aim. Each step is outlined below and described in relation to the relevant variables within each of the research aims.

Sample Size

To determine the minimum sample size required to address all study aims a sample size calculation was conducted. The sample was powered to conduct the planned logistical regression analysis using the guideline by Peduzzi et al.⁸³ If $N = 10 k / p$, N is the minimum sample size, k is the number of selected variables, and p is the proportion of the smallest group.⁸³ On the advice of a statistician, three separate logistic regressions for research aim four determined how the contributing factors predict the outcome into the binary logistical model of LPN/LVN versus RN, then ADN versus LPN/LVN and BSN, and then BSN versus ADN and LPN/LVN.

For this dissertation study, the number of contributing factors (variables) considered for logistic regression is the value k . The dependent variable is the educational pathway, and the smallest dependent group is LPN/LVN students. For 2021, the total number of U.S. candidates taking the NCLEX for the first time was a near-even split between ADN (88,349) and BSN (94,308) graduates.⁸⁴ For LPN/LVN graduates, the total number of graduates taking the exam was 46,356.⁸⁴ This indicates there are substantially more ADN and BSN students than LPN/LVN students within the U.S. Using NCLEX candidates as a proxy for relative student distribution, for research aim four, the rarer relevant outcome is entry to LPN/LVN educational programs. The number of LPN/LVN NCLEX first-time candidates was 20.0% of the entire number of all test takers in both licensure exams. Initially, using all 22 independent contributing variables from the framework would estimate $N = 10 k / p$, or $N = 10 \times 22 / 0.20$, providing a projected sample size of 1,100 students needed for adequate power relating to the logistical regression. Chapter Four will address the final sample size.

The sample accrual was monitored throughout the recruitment period by observing the responses and demographics of the completed surveys to determine if a sufficient sample size was reached. The initial email was sent on February 13, 2023. Throughout the survey process, more nursing programs were added to the email list. The final recruitment email was sent on April 18, 2023.

Data Cleaning

When the survey was closed for new data, surveys were evaluated for missing responses to all items. Descriptive and frequency statistics were conducted to determine

the percentage of missing values. Any participant responses that had critical questions omitted or that were substantially incomplete were removed from the final dataset.

The set of removed data was analyzed for patterns of missingness to see if participants stopped the survey at similar points in the study. Descriptive statistics were reported on the missing data to determine if there were patterns of items that students did not complete (see Chapter Four).

Data Analysis

The following was the planned data analysis plan for each of the four research aims. The type of statistics used was based on the level of measurement of variables analyzed (categorical versus continuous). Since most items in the survey were categorical (nominal and ordinal) levels of data, frequencies, chi-square, and logistic regression were the main analyses. All statistical analyses for this study were completed using SPSS version 28.0, a computer application held by Indiana University.

For the two standardized PROMIS questionnaires, internal validity-reliability was conducted prior to analysis to ensure acceptable ranges of 0.7 or above. Since both scales had not been used in college-aged students, performing this step gathered information to ensure the scales were reliable to capture the targeted readiness factors of general self-efficacy (GSE) and emotional support (ES).

Research Aim 1

The first research aim was to describe the personal characteristics of race, ethnicity, gender, socioeconomic factors, and educational background among the students enrolled in a pre-licensure nursing program and to determine if there are significant differences among groups by program type (LPN/LVN, ADN, BSN).

For this research question, basic information regarding student characteristics was based on frequency distribution tables since these were categorical response items. Building on the basic descriptive statistics used for demographic variables, the research aim was to analyze the significant differences in personal characteristics variables between three career educational programs. Significant differences were noted with a p-value <0.05 .

The independent variables related to demographics (age, gender, race, socioeconomic status, and educational background) were analyzed in relationship to the outcome variables LPN/LVN, ADN, and BSN. Pearson's Chi-squared was used to determine if there was a significant difference ($\alpha <0.05$) between the categorical variables of the observed frequencies of the dependent outcome variables and the expected outcome frequencies. The null hypothesis was that there is no difference in frequencies of gender, socioeconomic status, race, or rural/suburban/urban students that seek LPN/LVN, ADN, and BSN degrees.

Pearson's chi-squared test provided a way to examine categorical variables for the difference to the known expected frequency. The expected frequency used the survey totals for LPN/LVN, ADN, and BSN students. Degrees of freedom were determined based on $N-1$ the number of categories, three in this calculation (LPN/LVN, ADN, BSN), resulting in a degree of freedom of two.

Research Aim 2

The second research aim was to describe the awareness and motivating factors for the selection of a pre-licensure education program (LPN/LVN, ADN, BSN) and to determine if there were differences by program type (LPN/LVN,

ADN, BSN). For this research question, descriptive statistics (mean/standard deviation), frequencies, and one-way ANOVA statistical tests were used to evaluate the significant differences among the variables. For categorical items, chi-square tests of differences were used to determine group differences. For any items that produce continuous level data, one-way ANOVA analysis was conducted for items that produce factors in relationship with the dependent variables of the selected educational pathway. The ANOVA uses the sum of squares total, within, and between groups to determine an F-statistic. The F-statistic is a ratio comparison of chi-distributions to evaluate if the variance between groups is likely significant. A $p\text{-value} < 0.05$ was used to determine the significance of this calculation.

Research Aim 3

The third research aim was to describe the readiness for career decision factors such as facilitators, barriers, self-efficacy, and emotional support by type of nursing program and to determine the significant differences of these factors by program type (LPN/LVN, ADN, BSN). For this research question, descriptive statistics of mean and standard deviation, frequencies, and one-way ANOVA statistical tests to evaluate the significance of the independent differences based on the level of measurement of the items were used. For categorical items, chi-square tests of differences were used to determine group differences. For any items that produce continuous level data, one-way ANOVA was used for each of the factors in relationship with the dependent variables of the selected educational pathway. A $p\text{-value} < 0.05$ was used to determine the significance of this calculation.

Research Aim 4

To describe the contributing factors of personal characteristics, awareness factors, motivating factors, and readiness for career decision factors in determining the predictive outcome of enrollment into the selected educational track, regression modeling was used. The statistical method of logistic regression uses a logistical analysis to predict a binary dependent variable by use of the independent variables.⁸⁵ Logistic regression predicts the probability of an outcome for an individual person with given characteristics included in the model.⁸⁵ A log-likelihood indicates how much unexplained variability existed in the sample.⁸⁵ The greater the value of the log-likelihood, the more unexplained variation existed in the model.⁸⁵ Another useful aspect of the log-likelihood is the comparison with a baseline in which none of the independent variables affect the outcomes.⁸⁵

To assess the individual contribution of predictors a z-statistic, or Wald statistic, was used. This test helps to determine if the independent variable belongs in the model. The null hypothesis for Wald's test is that the independent variable has no effect on the outcome or dependent variable. If the difference was significant then the predictor belongs in the model.

An odds ratio was calculated to determine the impact of the individual predictors on the model. This helped to distinguish the importance of individual predictors on the model. The regression model was built using forced entry. The statistically preferred approach is the hierarchical approach when variables are entered into the model based upon pre-existing knowledge and theoretical underpinnings. A hierarchical approach could not be used because there are no theoretical predictions for the outcomes, aside from the knowledge that LPNs have a higher percentage of individuals identifying as

Blacks in their ranks than RNs.⁷³ Without knowing a predetermined order, a forced entry to the model was selected.

Items were evaluated for removal from the model. The employed method was the likelihood ratio. This approach helped determine if the outcome variables were more likely from chance than the effect of the predictor. Statistically, the consideration was to arrive at the simplest model that predicts the outcomes. This approach toward simplicity is called parsimony.⁸⁵

Summary

Based on the proposed descriptive study, the results from this study have the potential to provide new data to better understand why people choose nursing through the survey of current nursing students. The data results will be outlined in Chapter Four of this dissertation and discussed in conjunction with other career literature in Chapter Five. A description of the differences between students from the three educational pathways (LPN/LVN, ADN, BSN), their barriers, facilitators, self-efficacy, and social/emotional support could inform a better understanding of what sets the groups apart. With the described analyses, the data can inform strategies to improve recruitment and admission to nursing programs. Improving recruitment is the first step to increasing the diversity of nursing students in nursing programs.

CHAPTER FOUR: RESULTS

The purpose of this study was to gain further knowledge about the differences among nursing students and decisions in selecting an educational pathway. This chapter contains data findings from the quantitative survey sent to nursing students enrolled in U.S.-based pre-licensure practical nurse and registered nurse programs and addresses the following four aims: (1) are there demographic differences of students in different types of nursing programs, (2) is there a correlation between awareness and motivating factors and educational pathway, (3) are there differences in the facilitators, barriers, self-efficacy, and emotional support by program type (LPN/LVN, ADN, BSN) and race, (4) what are the predictive factors (personal characteristics, awareness, motivation, readiness for career decision) in determining the LPN/LVN versus ADN versus BSN educational track.

Sample Size

While there was no direct way to track which nursing programs were forwarding the survey information to students, participation numbers grew slowly over time. With each batch of recruitment emails, new programs were added to the mailing list. In total, 657 nursing programs were emailed. In April, some responses were received that programs would not forward the survey to students due to the impending end of the semester. The end-of-semester emails became much more common with the distribution on April 18, 2023. At that point, 1,020 survey responses were obtained. A statistician was consulted, and it was determined that there was likely sufficient sample size to close the recruitment phase of the study. Therefore, no additional recruitment emails were sent.

Over the course of the recruitment phase, 65 program representatives emailed their agreement to distribute the survey to their students, 12 programs required approval through their own IRB process, 7 declined outright, and 27 email addresses were returned undeliverable. The remaining email recipients did not respond. Since the student survey was included in the emails that were sent out there was no method to track which programs distributed the survey to students and which did not.

Of the 1,020 responses collected, the surveys were examined for missing or incomplete participation. Of the 1,020 surveys, 156 entries were excluded because the respondents were not in a nursing school or were already a nurse. An additional 123 surveys were excluded from the study because they were duplicates from the same individual as determined by their IP addresses or they stopped the survey within the first 9 questions. After these responses were excluded, 741 responses remained and were included in the statistical analysis.

Because the original sample size was powered on the lesser outcome in the LPN/LVN group, a frequency analysis was run to determine sufficient power to continue based on the numbers in this category. The LPN/LVN sample contained complete responses from 146 students. Upon advice from the statistician, the logistic regression was capped at one independent variable for every 10 LPN/LVN students, resulting in a maximum of 14 independent variables to include in the logistic regression.

Once the sample had been analyzed through the completion of research aims one, two, and three, the decision was made to include many of the variables that showed significant differences between program types. To limit the variables to 14 or fewer, some variables that were found to show significant differences had to be excluded from

the model. These decisions were made in the context of perceived value in a predictive model. Education level was excluded because the results, while significant, did not lead to any obvious conclusions regarding trends or provide clarity regarding differences between students in each program type. The awareness and motivating factors were also excluded for similar reasons. While there were significant differences and the differences helped to describe the students in the three program types, they did not provide sufficient clarity to allow any meaningful interpretation of predictive outcomes.

The logistic regression was conducted using 11 variables. These were six demographic variables (age, race, SES, first-generation college student, amount working, and financial independence) along with four items about facilitators and barriers (concern about the ability to succeed in school, concern about paying for school, school duration, and school cost), and GSE.

Research Question One

Sample Characteristics

To address research question one, the sample characteristics of the 741 completed surveys were evaluated using frequency and descriptive statistics, and chi-squared test of independence or one-way ANOVA depending on the level of measurement of the independent and dependent outcome.

Demographic variables included age, gender, race, socioeconomic status, education level, first-generation college student, financial independence, amount working per week, and information regarding financial aid. Overall, the sample included students who were a mean age of 27.4 years old ($n=741$, $SD=8.2$), 90.4% female, 70.0% White, 9.4% Black, 10.3% Hispanic, and 50.3% first-generation college students. The students

rated themselves an average of 5.5 out of ten in socioeconomic status. 58.9% of the students were responsible for their own finances.

No significant differences were found between educational pathway (LPN/LVN, ADN, and BSN) and gender (male, female, non-binary, prefer not to answer) or status of receiving financial aid (yes or no).

Significant group differences were found between the educational pathway and group characteristics of race (Black, White, Hispanic, Native American, Asian American-Pacific Islander, two or more, decline to answer), socioeconomic status (ranking of socioeconomic status 1-10), education level (GED, HS diploma, associate degree, bachelor's degree, graduate degree), first-generation college student (yes or no), financial status (independent, codependent, dependent), and hours working per week (more than 40 hours, 30-40 hours, 16-29 hours, less than 16 hours, not working) (see Table 6).

A histogram revealed that age distribution was skewed young. A younger skew is expected given the norms of post-secondary education for young adults after secondary education. Levene's test for homogeneity was significant ($p < 0.001$), indicating there was a difference in variance between the groups. ANOVA statistical analysis carries an assumption of homogeneity of variance. An ANOVA could not be performed. The Kruskal Wallis analysis was significant ($p < 0.001$). The results showed that the BSN students were younger (ranked mean 290.28) than the LPN/LVN and ADN students. According to the ranked means, LPN/LVN students (ranked mean 420.23) were somewhat younger than ADN students (ranked mean 466.74).

The survey did not gather information to determine if a BSN study was in a second-degree program (commonly referred to as an accelerated program). It is unknown

how many of the BSN students with previous bachelors or graduate degrees were in a second-degree BSN program.

Race

There were significant differences between racial categories and educational pathways ($\chi^2(12)=68.80$, $p<0.001$). For students in the BSN program, there were more White students compared to Hispanic students ($n=$) and Black/African American ((% n) students. For students in the ADN programs, there were fewer White students compared to Hispanic students (see Table 6).

Socioeconomic Status

Significant differences were also found in socioeconomic status and educational pathway ($\chi^2(18)=37.40$, $p=0.005$). Socioeconomic status data were obtained on self-report using a 10-point scale, with 10 representing the highest SES and one the lowest. To better visualize the data, SES was regrouped so the levels one to three were labeled as 'low,' four to seven were labeled 'middle,' and eight to ten were labeled as 'high' based on responses and a regrouping for natural division. When this step was completed, 75 (11.8%) of all students rated themselves as low SES, 495 (77.7%) as middle SES, and 67 (10.5%) as high SES. A chi-square of independence was repeated ($\chi^2(4)=18.08$, $p<0.001$).

First-Generation Students

Students that were considered first-generation college students (parents without a college degree) and the educational pathway was examined for differences ($\chi^2(2)=57.54$, $p<0.001$). For BSN students, fewer than expected were first-generation college students (136 to 187.3). For ADN students, more than expected were first-generation college

students (139 to 112.3). For LPN/LVN students, more than expected were first-generation college students (98 to 73.5).

Financial Status

Financial status was reported as financially independent, co-dependent on someone else, or financially dependent on someone else. Financial status and the educational pathway were analyzed for differences ($\chi^2(4)=84.52$, $p<0.001$).

Given the similarity of results of educational pathway and financial independence, a secondary analysis grouped the LPN/LVN and ADN students compared with students grouped by those who identified as at least partly financially dependent on someone else. The new groups were also input into a Chi-squared test for independence ($\chi^2(1)=79.77$, $p<0.001$). LPN/LVN and ADN students were more likely to be responsible for their own finances than BSN students, and BSN students were more likely to be at least partly financially dependent.

Students reported the number of hours they worked per week. Their responses were viewed in comparison with the educational pathway. The chi-squared test for independence was used to assess for differences among groups ($\chi^2(8)=59.32$, $p<0.001$). LPN/LVN students were more likely to work 30 or more hours per week and less likely to be working 1-29 hours per week.

For better visualization of the data, the data was combined for students working 30 or more hours, and for students working less than 30 hours. This grouping was made as a natural division considering standard societal labels of 'part-time' and 'full-time.' The categories of not working, working part-time (1-29 hours per week), and working near or more than full-time (30 or more hours) showed that LPN/LVN students were

most likely to be working full-time (23.3%), ADN students were most likely to be working in some capacity (76.7%), and BSN students were most likely to be working part-time or not at all (96.2%).

Student responses included a yes/no question as to whether they were receiving financial aid. The responses were compared to the educational pathway, using a chi-squared test for independence. The results were not significant ($\chi^2(2)=9.31, p=0.10$).

Table 6

Survey Demographics by Program Type

| Program Type | LPN/LVN n=146 | ADN n=223 | BSN n=372 | Totals n=741 | ANOVA or χ^2 | p |
|---|------------------------------|------------------------------|------------------------------|------------------------------|--------------------------------|---------|
| Age | \bar{x} (SD)= 29.5(9.0) | \bar{x} (SD)= 30.6(8.3) | \bar{x} (SD)= 24.7(8.2) | \bar{x} (SD)= 27.4(8.2) | One Way ANOVA F=4.026 | <0.001* |
| Socio-economic status, self-identified (Rated 1-10) | n=146 \bar{x} =5.01 | n=223 \bar{x} =5.31 | n=372 \bar{x} =5.85 | n=637 \bar{x} =5.5 | 37.40 | 0.005* |
| | n (%) | n (%) | n (%) | n (%) | χ^2 | |
| Gender | | | | | 3.53 | 0.763 |
| Male | 9 (6.2) | 20 (9.0) | 37 (9.9) | 66 (8.9) | | |
| Female | 137 (93.8) | 201 (90.1) | 332 (89.2) | 670 (90.4) | | |
| Non-binary | 0 | 1 (0.4) | 1 (0.3) | 2 (0.3) | | |
| Prefer not to answer | 0 | 1 (0.4) | 2 (0.5) | 3 (0.4) | | |
| Race | | | | | 68.80 | <0.001* |
| Black | 35 (24.0) | 23 (10.3) | 12 (3.2) | 70 (9.4) | | |
| White | 83 (56.8) | 144 (64.6) | 292 (78.5) | 519 (70.0) | | |
| Hispanic | 15 (10.3) | 34 (15.2) | 27 (7.3) | 76 (10.3) | | |
| Native American | 2 (1.4) | 1 (0.4) | 4 (1.1) | 7 (0.9) | | |
| AAPI | 2 (1.4) | 8 (3.6) | 16 (4.3) | 26 (3.5) | | |
| Two or more | 7 (4.8) | 11 (4.9) | 17 (4.6) | 35 (4.7) | | |

| Program Type | LPN/LVN n=146 | ADN n=223 | BSN n=372 | Totals n=741 | ANOVA or χ^2 | <i>p</i> |
|--------------------------------------|--------------------------|----------------------|----------------------|-------------------------|---|-----------------|
| Decline to answer | 2 (1.4) | 2 (0.9) | 4 (1.1) | 8 (1.1) | | |
| Highest achieved education level | | | | | 49.25 | <0.001* |
| GED | 12 (8.3) | 8 (3.6) | 6 (1.6) | 26 (3.5) | | |
| HS Diploma | 82 (56.6) | 108 (48.4) | 235 (63.2) | 425 (57.4) | | |
| Associate degree | 38 (26.2) | 56 (25.1) | 49 (13.2) | 143 (19.3) | | |
| Bachelor's degree | 10 (6.9) | 39 (17.5) | 74 (19.9) | 123 (16.6) | | |
| Graduate degree | 3 (2.1) | 12 (5.4) | 8 (2.2) | 23 (3.1) | | |
| Has a parent with a four-year degree | 48 (32.9) | 84 (37.7) | 236 (63.4) | 368 (49.7) | 57.54 | <0.001* |
| Financial status | | | | | 84.52 | <0.001* |
| Financially independent | 115 (79.3) | 161 (72.5) | 159 (42.9) | 435 (58.9) | | |
| Financially codependent | 18 (12.4) | 50 (22.5) | 164 (44.2) | 232 (31.4) | | |
| Financially dependent | 12 (8.3) | 11 (5.0) | 48 (12.9) | 71 (9.6) | | |
| Hours working per week | | | | | 59.32 | <0.001* |
| More than 40 hours | 11 (7.5) | 12 (5.4) | 2 (0.5) | 25 (3.4) | | |
| 30-40 hours | 23 (15.8) | 25 (11.2) | 12 (3.2) | 60 (8.1) | | |
| 16-29 hours | 34 (23.3) | 73 (32.7) | 101 (27.2) | 208 (28.1) | | |
| Less than 16 hours | 32 (21.9) | 61 (27.4) | 138 (37.1) | 231 (31.2) | | |
| Not working | 46 (31.5) | 52 (23.3) | 119 (32.0) | 217 (29.3) | | |
| Receiving some form of financial aid | 126 (86.3) | 168 (75.3) | 312 (83.9) | 606 (81.8) | 9.31 | 0.10 |

Research Aim Two

Research question two looked to describe the awareness and motivating factors for choosing the current educational pathway and to analyze for differences by program type. The participants rated seven awareness factor questions on a 5-point scale, 'not at all important,' 'slightly important,' 'moderately important,' 'very important,' and 'extremely important'.

To observe differences more clearly the five responses were collapsed into two groups. 'Not at all important' and 'slightly important' were collapsed into one grouping, and 'moderately important,' 'very important,' and 'extremely important' were collapsed into a second grouping based on the frequency output of the data and logical split in Likert-responses. The two groups were then compared to the educational pathway via a chi-square of independence.

Awareness Factors

Friend-Family Connection

The awareness factor of having a friend or family member who was a nurse was a factor in choosing nursing in 80.3% of the respondents. A friend or family member who was a nurse was more of a factor for BSN students (84.3%) than ADN students (79.3%) and LPN/LVN students (71.3%), with a significant difference between the groups ($\chi^2(2)=10.85, p=0.004$).

Having a friend who was a nursing student was noted as a positive awareness factor for choosing nursing in 86.5% of the sample. A friend who was a nursing student was more of a factor for BSN students (91.2%) than ADN students (85.7%) and

LPN/LVN students (75.0%), with a significant difference between the groups ($\chi^2(2)=22.39$, $p<0.001$).

Personal Experience

A personal healthcare experience was a positive awareness factor for 50.1% of the students in the sample. A personal healthcare experience was more of a factor for BSN students (54.1%) than ADN students (51.6%) and LPN/LVN students (36.8%), with a significant difference between the groups ($\chi^2(2)=12.23$, $p=0.002$).

Of all the students in the sample, 66.5% wanted to be a nurse since childhood. Wanting to be a nurse since childhood was more of a factor for BSN students (74.2%) than ADN students (65.0%) and LPN/LVN students (48.5%), with a significant difference between the groups ($\chi^2(2)=29.58$, $p<0.001$).

Research of Career Options

Students who credit research of career options as a positive awareness factor for choosing nursing were 49.3% of the sample. ADN students rated the factor the highest at 51.6%, BSN students at 50.0%, and LPN/LVN students at 43.7%. There was no significant difference between groups ($\chi^2(2)=2.23$, $p=0.328$).

There was a broad spread in frequency amongst the groups who credit learning about a nursing career in middle or high school as a positive factor. Learning about nursing in school was more of a factor for BSN students (69.1%) than ADN students (61.3%) and LPN/LVN students (44.1%), with a significant difference between the groups ($\chi^2(2)=26.38$, $p<0.001$). Overall, 62.0% of students report that learning about nursing in school was a positive factor in choosing nursing.

Suggested Nursing

In the sample, 75.6% of nursing students stated that someone suggested nursing as a career option and that suggestion was a factor in choosing a career in nursing. Having someone suggest nursing was more important for BSN students (77.2%) than ADN students (77.0%) and LPN/LVN students (69.1%). There was no significant difference between program types ($\chi^2(2)=3.82$, $p=0.148$).

Motivating Factors

There were seven motivating factors students endorsed and group differences were noted in the following factors.

Helping People

There was a strong endorsement that students selected a career in nursing to help people. For the factor, 'I wanted to help people' was listed as a factor in 96.1% of the overall sample. For LPN/LVN students, the number was 97.0%, for ADN students, 95.4%, and 96.1% for BSN students. There was no significant difference between groups ($\chi^2(2)=0.60$, $p=0.739$).

First Choice

Results showed that 59.4% of the respondents stated that nursing was their first career choice. Nursing as a first choice was reported more for LPN/LVN students (67.4%) than ADN students (53.0%) and BSN students (60.2%), with a significant difference between the groups ($\chi^2(2)=7.38$, $p=0.025$).

Income Potential

Students were asked if they chose nursing due to the wages that being a nurse would provide and found that 53.9% of the sample stated that potential income was a factor in choosing nursing. Income as a factor was reported more for ADN students

(60.8%) than BSN students (54.4%) and LPN/LVN students (41.5%), with a significant difference between the groups ($\chi^2(2)=12.61$, $p=0.002$).

Flexible Hours

Flexible work hours were endorsed in 60.2% of student responses as a motivating factor in choosing nursing. The flexible hours were more of a factor for BSN students (64.4%) than ADN students (60.4%) and LPN/LVN students (48.9%), with a significant difference between the groups ($\chi^2(2)=9.83$, $p=0.007$).

Potential for Career Advancement

Most nursing students indicated one reason they chose nursing was because of the opportunity for career advancement (65.7%). Career advancement was reported more for LPN/LVN students (72.6%) than ADN students (69.9%) and BSN students (60.7%), with a significant difference between the groups ($\chi^2(2)=8.61$, $p=0.014$).

Job Security

A large majority of nursing students indicated that one reason they chose nursing was because of the job security in the profession (84.0%). Job security is more of a factor for BSN students (86.7%) than ADN students (85.7%) and LPN/LVN students (74.1%), with a significant difference between the groups ($\chi^2(2)=12.41$, $p=0.002$).

Ability to Travel

A minority of students indicated that one reason they chose nursing was because of the ability to travel as a nurse (44.0%). The ability to travel was reported more for ADN students (45.8%) than BSN students (43.1%) and LPN/LVN students (43.7%), with no significant difference between the groups ($\chi^2(2)=0.420$, $p=0.811$).

Research Aim Three

The third research aim was to describe the readiness for career decision-making factors which was measured using questions regarding facilitators, barriers, self-efficacy, and emotional support by nursing program type, and determine if there are significant differences.

Since significant differences were found in racial composition between the LPN/LVN, ADN, and BSN groups, race was added to the analysis for research aim three. The objective was to consider the intersection of facilitators, barriers, and self-efficacy by race to better inform the discussion by program type. The findings are presented below.

Facilitators and Barriers

Socioeconomic Status (SES)

Self-reported socioeconomic status was identified as a potential barrier or facilitator, depending on circumstances. There were significant differences in SES identified between students in the three educational pathways. As noted in Aim 1 results, students rated their SES from 1-10. BSN students rated their SES as higher (5.85) than ADN (5.31) and LPN/LVN (5.01) students.

Barriers to RN Entry Pathway

As part of the survey considering potential barriers, participants in LPN/LVN programs were asked about their desire to be an RN. Of the 141 practical nursing students who responded, 98 (69.5%) noted that becoming an RN was their first choice. 43 students, or 30.5%, said that being an RN was not their first choice.

LPN/LVN students then individually ranked five potential barriers to becoming an RN. The potential barriers were ‘cost of schooling,’ ‘length of the program,’ ‘could

not get into an RN program,’ ‘family commitments,’ and ‘other’ which had an option for free text. ‘Cost of schooling’ was ranked as the first or second barrier in 49.6% of responses. ‘Length of time in school’ was ranked as the first or second barrier for 59.5% of responses. ‘Could not get into an RN program’ was ranked as the first or second barrier in 29.8 percent of responses. Family commitments were identified as the first or second greatest barrier in 24.8% of responses. These results can be viewed in Table 7.

Table 7

Percent Ranked First or Second Greatest Barrier by LPN/LVN Students

| Barrier | % |
|------------------------------|----------|
| Length of RN school | 59.5% |
| Cost of RN school | 49.6% |
| Could not get into RN school | 29.8% |
| Family commitments | 24.8% |
| Other | 36.4% |

The choice of ‘other’ was provided with a text entry option. ‘Other’ was selected as the greatest barrier in 31.4% of responses. It was also rated as the lowest, or fifth most important barrier, on 43.8% of the responses. Many of the LPN/LVN participants who responded to this question (57 out of 121), regardless of where they ranked ‘other,’ provided a free text response.

All the participating students were asked general questions about their concerns or perceived barriers to entering a nursing program. Students were asked if they were concerned with how they were going to pay for school, worried about family obligations,

concerned about the amount of time nursing school would take, and worried about their ability to succeed in nursing school. The responses were obtained on a Likert scale, from 'strongly agree' to 'strongly disagree.' To identify the students who considered the factors as barriers, the responses were collapsed into two natural categories. The first category contained 'strongly agree' and 'somewhat agree,' with the second category containing 'neutral,' 'somewhat disagree,' and 'strongly disagree.'

Cost of School

Most nursing students indicated worry about how they were going to pay for nursing school (69.3%). Worry about paying for school was reported more for LPN/LVN students (79.5%) than ADN students (70.5%) and BSN students (64.7%), with a significant difference between the groups ($\chi^2(2)=10.196$, $p=0.006$).

Caregiving for Others

Many nursing students indicated that they have obligations to support and care for a family. Overall, these concerns were cited by 55.4% of the students in the sample. Worry about supporting a family was reported more for ADN students (73.7%) than LPN/LVN students (68.4%) and BSN students (39.3%), with a significant difference between the groups ($\chi^2(2)=75.87$, $p<0.001$).

Duration of Program

Most nursing students indicated that they have concerns about the duration of schooling to become a nurse. Overall, these concerns were endorsed by 63.3% of the students in the sample. Worry about the duration of schooling was reported more for ADN students (77.4%) than LPN/LVN students (65.4%) and BSN students (53.9%), with a significant difference between the groups ($\chi^2(2)=32.33$, $p<0.001$).

Ability to Succeed

Most nursing students indicated worry about their ability to succeed in nursing school (78.6%). Worry about their ability to succeed was reported more for LPN/LVN students (86.5%) than ADN students (79.3%) and BSN students (75.3%), with a significant difference between the groups ($\chi^2(2)=7.28, p=0.026$).

Self-Efficacy and Emotional Support

Because the HealthMeasures PROMIS survey items had not been used in this population before, reliability was assessed. To assess reliability a Cronbach alpha was conducted. A reliability score over 0.7 indicates sufficient reliability.⁸⁵ Cronbach's Alpha for reliability was 0.878 for the General Self-efficacy items, and 0.942 for the Emotional Support items. Both values indicate adequate reliability of the items.

The concepts of self-efficacy and emotional support were both identified as potential facilitators or barriers. The General Self Efficacy (GSE) short form 4 and the Emotional Support (ES) short form 4 data were analyzed through the HealthMeasures Scoring Service website. The data was de-identified prior to analysis and submission to the online scoring service.

As noted in Chapter Three, the scoring service produces a T-score and standard error for each participant. The standard error is the measure of variance for the T-Score.⁸⁵ As described in the directions for scoring the instrument, the "method of scoring uses responses to each item for each participant. It is referred to as 'response pattern scoring.' Because response pattern scoring is more accurate than the use of raw score look-up tables included in the manual, it is preferred."⁸⁰ Two sets of data were obtained, one for each test. The calculated value of the T-score represents the participant's score on the

GSE short form 4 and the ES short form 4 which is the same for both instruments. The T-score is calculated so that a score of 50 is the mean, and the standard deviation is 10.

The obtained GSE T-scores for the sample include n=741 responses, indicating every included participant in the study answered all four questions. The LPN/LVN students (M=53.28; SD=8.9) scored higher than the ADN (M=51.49; SD=8.5) and BSN (M=49.49; SD=7.6) students. The median score for the ADN and BSN students was the same (49.4), indicating more skewness in the ADN student sample compared to the BSN student sample.

The obtained ES T-scores for the sample include n=741 responses, indicating every included participant in the study answered all four questions. The LPN/LVN (M=54.63; SD=8.7) and BSN (M=54.65; SD=7.8) students scored higher than the ADN students (m=52.97; SD=8.9). The median score for the LPN/LVN students was notably higher than the mean (62.00), indicating more relative skewness in the LPN/LVN student sample when compared to the BSN student sample.

To analyze group differences the one-way ANOVA was performed as noted in Chapter Three. The one-way ANOVA test has an assumption of similar distribution of the groups compared in the sample.⁸⁵ To check for similar distribution in the GSE T-score data, a Levene's test was conducted. The Levene's test for difference in the means was significant ($p < 0.001$) indicating there was significant variance in the distributions in the means of the groups and GSE T-scores.⁸⁵ The test was also run for the ES T-scores and the education pathway groups, failing the test for homogeneity ($p < 0.001$). Therefore, the one-way ANOVA was not an appropriate statistical test due to the failed assumption.

A statistician was consulted for assistance and a Kruskal-Wallis test was recommended and conducted.

Kruskal-Wallis is a rank-based nonparametric test that is designed to be sensitive to unequal means and is appropriate for assessing outcomes of more than two groups.⁸⁵ The GSE and ES T-scores were then analyzed to compare differences between educational program pathways through a Kruskal-Wallis test. The test was conducted for the GSE and educational program pathway first.

General Self-Efficacy

There were significant group differences when comparing GSE T-scores to education program type ($\chi^2(2)=32.33$, $p<0.001$). The ranked mean for LPN/LVN student GSE T-score was 406.95, 362.90 for ADN student GSE T-score, and 317.09 for BSN student GSE T-scores. The results indicate that there was a significant difference between groups, with LPN/LVN students scoring higher in self-efficacy than ADN and BSN students. The ADN students scored higher than the BSN students.

Emotional Support

The results of the test of ES T scores using the Kruskal-Wallis test comparing ES T-scores to education program type was not significant ($\chi^2(2)=5.411$, $p<0.067$). The ranked mean for LPN/LVN student ES T-score was 360.10, 320.79 for ADN students, and 355.94 for BSN students. The results indicate that LPN/LVN students and BSN students had similar scores in ES, and the ADN students were just lower but did not reach significance.

Facilitators and Barriers by Race

An analysis of the results of research aim three was conducted by race to assess the differences in barriers and facilitators for educational pathway by self-identified racial groups. For this analysis, due to the lack of adequate sample size in all of the racial categories, the racial analysis was completed using only respondents identifying as White, Hispanic, and Black.

Caregiving

There were significant findings for the comparison of race when examining whether the student had concerns about supporting or caregiving for a family during school ($\chi^2(2)=14.135$, $p<0.001$). Black students (72.7%) were most likely to indicate concerns about supporting a family during school, followed by Hispanic (63.4%) and White students (50.6%).

Paying for School

There were significant differences found when comparing racial categories and whether students had concerns about paying for nursing school ($\chi^2(2)=6.204$, $p=0.045$). Hispanic students (80.3%) were more likely to indicate concerns about paying for school, compared to Black (74.2%) and White students (66.8%).

Ability to Succeed

Chi-square of independence was conducted for race when examining whether the student had concerns about their ability to be successful in school. The results were significant ($\chi^2(2)=7.024$, $p=0.030$). Hispanics (90.1%) were most likely to indicate concerns about their ability to be successful in school, followed by Blacks (80.3%) and Whites (76.5%).

Length of Program

There was a significant difference in concerns about the length of the nursing program by racial category ($\chi^2(2)=9.135$, $p=0.010$). Hispanic students (77.5%) were more likely to indicate concerns about the length of school, compared to Black (69.7%) and White students (60.4%).

Socio-Economic Status

Chi-square of independence was conducted for racial groups by SES group (low, medium, high, as defined in Chapter Three) and found significant differences in SES among the three racial categories ($\chi^2(4)=10.797$, $p=0.029$). Black (mean=5.14) and Hispanic students (mean=5.35) had lower self-reported SES status. White students (5.66) had higher levels of SES status, compared to the other racial groups.

Hours Working

Chi-square of independence was conducted for race when examining the amount they were working, with the groups collapsed into not working, working less than 30 hours per week, and working more than 30 hours per week. The results were significant ($\chi^2(4)=10.730$, $p=0.030$), with Blacks (20.0%) and Hispanics (18.4%) more likely to be working 30 or more hours than Whites (9.4%).

Parents with a Degree

Chi-square of independence was conducted for race when examining whether the student had a parent with a four-year degree. The results were significant ($\chi^2(2)=36.207$, $p<0.001$). Blacks (28.6%) and Hispanics (27.6%) were less likely to have a parent with a four-year degree than Whites (56.3%).

General Self-Efficacy

An analysis was conducted to analyze GSE and ES by race, using the three larger racial groups in the sample: White, Black, and Hispanic. Due to the known non-parametric nature of the data, a Kruskal-Wallis H-test was run. For GSE T-scores, Black students (380.87) had higher mean rank scores than Hispanic (343.40) and White (299.50) students. The results showed significant differences between groups ($H=13.875$, $p<0.001$). Black students tested higher in self-efficacy than Hispanic students, who in turn tested higher in self-efficacy than White students.

Emotional Support

For ES T-scores, Hispanic students (318.61) had higher mean rank scores than Black (314.34) and White (308.25) students. The results showed a non-significant difference between groups ($H=0.268$, $p=0.875$). There was no significant difference in the sample by race and ES.

Research Aim Four

Research Aim 4 sought to determine predictive factors in determining the educational program pathway. This analysis used binomial logistic regression by comparing each of the possible combinations, LPN/LVN versus ADN/BSN, ADN versus LPN/LVN/BSN, and BSN versus LPN/LVN/ADN educational pathways. For this test, each included variables that were found to show significant differences between program types. As discussed previously, the model included 11 independent variables. These variables were age, race, the amount the participant was working, whether the parent had a four-year degree, the participant's financial independence, their identified SES, their worry about paying for school, their worry about their ability to succeed in school, their

worry about how to support a family during school, their worry about school duration, and their general self-efficacy.

LPN/LVN Prediction Model

A logistic regression was performed to determine the effects of age, race, the amount the participant was working, whether the parent had a four-year degree, the participant's financial independence, their identified SES, their worry about paying for school, their worry about their ability to succeed in school, their worry about how to support a family during school, their worry about school duration, and their GSE on the likelihood of choosing an LPN/LVN pathway or ADN/BSN educational path.

The model revealed three independent variables that had a significant predictive effect on the outcome. These were 1) concerns about the need to support a family ($p=0.007$), 2) concerns about the ability to succeed in school ($p=0.010$), and 3) GSE score ($p=0.014$). The model explained 12.8% (Nagelkerke R^2) of the variance in selecting the LPN/LVN pathway and correctly classified 83.2% of cases.

The analysis showed that, when holding other variables constant, the odds of selecting an LPN/LVN education program pathway over an ADN or BSN pathway decreased by 26.3% with increased concern about their need to support a family during nursing school ($p=0.007$, OR=0.737, 95% CI [0.590, 0.919]). Similarly, the odds of selecting an LPN/LVN education program pathway over an ADN or BSN pathway decreased by 26.5% with increased concern about their ability to succeed in nursing school ($p=0.010$, OR=0.735, 95% CI [0.582, 0.928]).

When holding other variables constant, the odds of selecting an LPN/LVN education program pathway over an ADN or BSN pathway decreased by 3.8% with each

level of increase in GSE t-score ($p=0.014$, $OR=1.038$, 95% CI [1.007, 1.070]). The results of the logistic regression model for LPN/LVN over an ADN or BSN are shown in Table 8.

Table 8

Significant predictors of LPN/LVN over an ADN or BSN

| | p | OR | 95% CI | |
|---------------------------------------|-------|-------|--------|-------|
| | | | Lower | Upper |
| Concerns about need to support family | 0.007 | 0.737 | 0.590 | 0.919 |
| Concerns about ability to succeed | 0.010 | 0.735 | 0.582 | 0.928 |
| General self-efficacy (GSE) | 0.014 | 1.038 | 1.007 | 1.070 |

ADN Prediction Model

A logistic regression was performed to determine the effects of age, race, the amount the participant was working, whether the parent had a four-year degree, the participant's financial independence, their identified SES, their worry about paying for school, their worry about their ability to succeed in school, their worry about how to support a family during school, their worry about school duration, and their GSE on the likelihood of choosing an LPN/LVN pathway or ADN/BSN educational path.

The model revealed four independent variables that had a significant predictive effect on the outcome. These were 1) mean age ($p=0.002$), 2) concerns about paying for school ($p=0.010$), 3) concerns about the duration of school ($p=0.002$), and 4) a parent that has a four-year degree ($p=0.018$). The model explained 18.9% (Nagelkerke R^2) of the variance in selecting the ADN pathway and correctly classified 73.2% of cases.

When holding other variables constant, the odds of selecting an ADN education program pathway over an LPN/LVN or BSN pathway increased by 4.5% with each year of increasing age ($p=0.002$, $OR=1.045$, 95% CI [1.016, 1.075]).

The analysis showed that, when holding other variables constant, the odds of selecting an ADN education program pathway over an LPN/LVN or BSN pathway increased by 26.7% with reduced concern about their ability to pay for nursing school ($p=0.010$, $OR=1.267$, 95% CI [1.059, 1.516]). Similarly, the odds of selecting an ADN education program pathway over an LPN/LVN or BSN pathway increased by 26.6% with increased concern about the duration of nursing school ($p=0.002$, $OR=0.734$, 95% CI [0.605, 0.891]).

When holding other variables constant, the odds of selecting an ADN education program pathway over an LPN/LVN or BSN pathway decreased by 40.2% if they had a parent with a four-year degree ($p=0.018$, $OR=0.598$, 95% CI [0.390, 0.917]). The results of the logistic regression model for ADN over an LPN/LVN/BSN program are shown in Table 9.

Table 9

Significant predictors of ADN over an LPN/LVN or BSN

| | | | 95% CI | |
|---------------------------------------|----------|-----------|--------------|--------------|
| | p | OR | Lower | Upper |
| Age | 0.002 | 1.045 | 1.016 | 1.075 |
| Concerns about paying for school | 0.010 | 1.267 | 1.059 | 1.516 |
| Concerns about the duration of school | 0.002 | 0.734 | 0.605 | 0.891 |
| Parent has a four-year degree | 0.018 | 0.598 | 0.390 | 0.917 |

BSN Prediction Model

A logistic regression was performed to determine the effects of age, race, the amount the participant was working, whether the parent had a four-year degree, the participant's financial independence, their identified SES, their worry about paying for school, their worry about their ability to succeed in school, their worry about how to support a family during school, their worry about school duration, and their GSE on the likelihood of choosing a BSN pathway or LPN/LVN/ADN educational path.

The model revealed seven independent variables that had a significant predictive effect on the outcome. These were 1) age ($p=0.001$), 2) race ($p=0.003$), 3) a parent that has a four-year degree ($p=0.18$), 4) amount working ($p=0.50$), 5) concerns about paying for school ($p=0.002$), 6) concerns about the need to support a family during school ($p<0.001$), and 7) GSE ($p=0.028$). The model explained 31.4% (Nagelkerke R^2) of the variance in selecting the BSN pathway and correctly classified 71.5% of cases.

The analysis showed that, when holding other variables constant, the odds of selecting a BSN education program pathway over an LPN/LVN or ADN pathway decreased by 4.9% with each year of increasing age ($p=0.001$, OR=0.951, 95% CI [0.923, 0.980]).

The results showed that, when holding other variables constant, the odds of selecting a BSN education program pathway over an LPN/LVN or ADN pathway decreased by 37.8% if the student was Hispanic or Black ($p=0.003$, OR=0.622, 95% CI [0.456, 0.850]). The odds of selecting a BSN education program pathway over an LPN/LVN or ADN pathway increased by 64.6% if the student had a parent with a four-year degree ($p=0.018$, OR=1.646, 95% CI [1.090, 2.486]). The odds of selecting a BSN

education program pathway over an LPN/LVN or ADN pathway increased by 21.8% with each decrease in the time working, reported as hours per week and ranked from one to five, with one representing working 40 hours or more per week and five equivalent to not working at all (p=1.218, OR=1.218, 95% CI [1.000, 1.484]).

When holding other variables constant, the odds of selecting a BSN education program pathway over an LPN/LVN or ADN pathway decreased by 24.3% if the student had concerns about paying for school (p=0.002, OR=0.757, 95% CI [0.634, 0.905]). The odds of selecting a BSN education program pathway over an LPN/LVN or ADN pathway decreased by 38.3% if the student had concerns about supporting a family during nursing school (p=<0.001, OR=1.383, 95% CI [1.168, 1.639]).

The analysis showed that, when holding other variables constant, the odds of selecting a BSN education program pathway over an LPN/LVN or ADN pathway decreased by 2.8% with each level increase in the GSE t-score (p=0.028, OR=0.972, 95% CI [0.948, 0.997]). The results of the logistic regression model for BSN over an LPN/LVN or ADN are shown in Table 10.

Table 10

Significant predictors of BSN over an LPN/LVN or ADN

| | p | OR | 95% CI | |
|--------------------------------|-------|-------|--------|-------|
| | | | Lower | Upper |
| Age | 0.001 | 0.951 | 0.923 | 0.980 |
| Race | 0.003 | 0.622 | 0.456 | 0.850 |
| Parent with a four-year degree | 0.018 | 1.646 | 1.090 | 2.486 |
| Amount working | 0.050 | 1.218 | 1.000 | 1.484 |

| | | | 95% CI | |
|------------------------------------|----------|-----------|---------------|--------------|
| | p | OR | Lower | Upper |
| Concerns about paying for school | 0.002 | 0.757 | 0.634 | 0.905 |
| Concerns about supporting a family | <0.001 | 1.383 | 1.167 | 1.639 |
| General self-efficacy (GSE) | 0.028 | 0.972 | 0.948 | 0.997 |

CHAPTER FIVE: DISCUSSION

The purpose of this dissertation research study was to generate new knowledge regarding why students selected a nursing program pathway, especially when looking at underrepresented minority student populations. The goal was to understand this descriptive work to move toward better program interventions to increase diversity within these programs.

The following chapter discusses the findings as they relate to the current literature, presents the strengths and limitations of the study, describes implications, and provides recommendations for future research.

Interpretation of Research Findings

In this section, the findings from Chapter Four are discussed in relation to the research literature concerning reasons and factors regarding why people choose entry into one of the three nursing education pathways. Findings are discussed by research aim.

Sample Characteristics

The findings of aim one described the characteristics of age, race, ethnicity, gender, socioeconomic factors, and educational background among the students enrolled in a pre-licensure nursing program and determined if there are significant differences among groups by program type (LPN/LVN, ADN, BSN) and race. Looking at the entire sample of 741 participants who completed the survey, participation was a geographically diverse sample with representation from 26 states within the U.S. The participants were all pre-licensure nursing students in LPN/LVN (n=146), ADN (n=223), or BSN (n=372) programs ensuring representation of the typical nursing programs.

Significant statistical differences between the students in the three educational pathways and racial categories were noted. The following discusses the differences in sample characteristics within the educational pathways.

Research Aim One

To address research question one, the sample was evaluated using frequency and descriptive statistics. Many significant differences were identified.

Significant differences in demographic variables related to program type outcome included age, race, socioeconomic status, education level, first-generation college student, financial independence, and amount working per week.

Age Differences by Pathway

The mean age of sample participants was 27.4 years old. There was a significant difference in age, with younger BSN students ($M=27.4$; $SD=8.2$), and the somewhat older aged students in LPN/LVN ($M=29.5$; $SD = 9.0$) and ADN ($M=30.6$; $SD =8.3$) groups ($p<0.001$). Subjects who attend undergraduate college immediately after secondary school (under 23 years of age) are considered traditional students in the literature.⁸⁶ These findings indicate that LPN/LVN and ADN students are more likely to be of a higher age and enter college as non-traditional students.

Another explanation for the age differences among the educational pathways found in the research is that age has been identified as a barrier to success in the traditional post-secondary education environment, which typically focuses on the traditional, younger, student.⁸⁷ Non-traditional students often have financial, employment, and family commitments outside of the academic setting.^{88,89} Non-traditional students have been found to have greater rates of attrition when attending

traditional face-to-face classes typically found in BSN programs.⁸⁸ LPN/LVN and ADN programs are significantly shorter than the traditional BSN program, allowing for quicker completion and allowing students to overcome these barriers to education.

Racial Differences by Pathway

LPN/LVN Students

The LPN/LVN student sample was 24.0% Black, 10.3% Hispanic, and 56.8% White. In the practice setting, LPN/LVNs are 18.5% Black, and 29% identify as racial minorities.⁵ The current national population is 13.6% Black, 19.1% Hispanic, and 58.9% White.⁹⁰ When compared to nursing and national statistics, this sample of students consisted had a higher than expected percentage of underrepresented minorities of Blacks in the LPN/LVN populations, thus, LPN/LVN students were significantly more likely to be Black than ADN or BSN students.

ADN Students

The ADN students were comprised of 15.2% Hispanic, 10.3% Black, and 64.5% White. ADN students are more likely to be Hispanic compared to students in the LPN/LVN and BSN pathways. When considering the national population, the ADN sample was slightly below the national representation in both Hispanic (-3.9%) and Black (-3.3%) students.

There is little research to fully understand this finding. Whether it is due to the recruitment of this population into ADN programs, unintended regional patterns of enrollment, or other unidentified factors is unclear. Understanding why Hispanic students select an ADN program is important and could be a focus of future research.

BSN Students

The BSN students in the sample were mainly White (78.5%) and female (89.2%), which is representative of the national trends indicating that 80.8% of RNs are White and 90.9% are women.³ The BSN mean age was 24.7 years. The BSN students rated their SES a mean of 5.85, 63.4% indicated they had a parent with a four-year degree, and 57.1% had someone else helping to support them financially.

Gender Differences by Pathway

The sample contained 8.9% males and 90.4% females overall. By program type, males comprised 6.2% in LPN/LVN programs, 9.0% in ADN programs, and 9.9% in BSN programs. Nationally, males make up 9.1% of RNs and 7.7% of LPN/LVNs, and females comprise 90.9% of RNs and 92.3% of LPN/LVNs.⁵ Statistically, there were no significant differences in the gender proportions between the three educational pathways.

The lack of gender variability has been researched in terms of recruitment, retention, and barriers to overall gender representation in nursing. Multiple studies illustrate the negative experiences, perceptions, and barriers for men in nursing.⁹¹⁻⁹⁴ Men who decide to enter the nursing profession report that they often encounter negative gender-related stereotypes.⁹² Some of these stereotypes include being labeled 'homosexual,' 'effeminate,' or 'soft.'⁹⁵⁻⁹⁷ These negative societal stereotypes are felt by men early in their careers, often beginning with their entry into nursing school.^{95,97} Men's experiences in nursing school, and later when working as a nurse, are different than women's and are often subject to stereotypes about their abilities and emotional competence.^{91,92,95,98}

More research is needed to better understand how to recruit men to nursing to overcome the underrepresentation within the nursing profession, in addition to focusing on recruitment of underrepresented race minorities.

Socioeconomic and Education Factors by Pathway

There is no previous literature that discusses the education pathway career decision-making for nursing students in terms of financial and educational factors. There is also no literature that addresses these questions while also including considerations of race. The discussion of each factor includes the effect on the educational pathway and considers the intersectionality with race.

The educational and income attainment of parents influences the opportunities that are present for their children.^{99,100} The children of higher-income parents go to better-performing secondary schools than those of lower-income and minority parents.¹⁰¹⁻¹⁰³ It has been noted that children of parents with lower levels of education grow up in lower-income homes with more limited educational opportunities.^{99,100,104} In addition, first-generation college students perceive themselves as having lower levels of support and financial resources.⁷⁸

Financial Differences

There were significant differences in SES among the educational pathways and by racial categories. The LPN/LVN students reported lower SES than the ADN students, who in turn reported lower SES than BSN students. This could be because the LPN/LVN group had a greater percentage of Black students. Based on national economic trends, this aligns with reports that suggest there are differences in income status by race. Based on national statistics, Blacks have greater rates of poverty based on income (19.5%) than

Hispanics (17.1%), and Whites (10.1%).¹⁰⁵ The Black household median yearly income (\$48.3k) trails behind income of Hispanic households (\$60.0k) and White households (\$74.2k).¹⁰⁵

LPN/LVN students were also more likely to be financially responsible for themselves, and the least likely to have someone else contributing to their finances (20.7%). Generally, the ADN students were reported to be lower SES, more likely to be first-generation students, more racially diverse, working more, and more financially independent. LPN/LVN students were more likely to be working 30 or more hours a week (23.3%) than ADN and BSN students which is consistent with the finding that these students were more financially independent.

ADN students were more likely to be responsible for their own finances (72.5%) than BSN students (58.9%), and less likely to have someone else contributing to their financial status (27.5%). ADN students were more likely to be working 30 or more hours per week than BSN students (16.6% compared to 3.7%) potentially explained by the fact they are responsible for generating their own income. Generally, the ADN students reported lower SES compared to the BSN students.

Education Status/First-Generation

LPN/LVN students were significantly more likely to be first-generation college students (32.9%) than BSN students (63.4%). ADN students were also more likely to be first-generation college students (37.7%) than were the BSN students.

In terms of previous education, LPN/LVN students were more likely to have their General Education Development (GED) (8.3%) compared to ADN (3.6%) and BSN students (1.6%). Those who enter college with a GED have lower rates of retention than

those with high school diplomas.¹⁰⁶ LPN/ LVN students (35.2%) were less likely than ADN students (48.0%) to have previously completed a degree at any level (associate, bachelor's, or master's degree). More research is needed to understand the educational preparedness of LPN/LVN students, compared with nursing students in ADN or BSN programs.

The LPN/LVN students in the sample identified as lower income, were more likely to have a GED, were less likely to have parents with degrees, were more likely to be working 30 or more hours a week, and were more likely to be financially responsible for their own finances when compared to the ADN and BSN students. For these students, there were increased financial barriers and educational barriers compared to the students in the other groups.

Interestingly, ADN students had more than expected students who enrolled with a graduate degree or associate degree-prepared. In fact, 48.0% of ADN students had a previous degree, compared to 35.2% of LPN/LVN and 35.3% of BSN students. For these students, they were pursuing an additional degree, possibly connected with a career change. Associate degree nursing programs typically take about two years to complete, and an accelerated BSN program may take about a year and a half. According to the AACN, there are 318 Commission on Collegiate Nursing Education CCNE-accredited accelerated BSN nursing degree programs, graduating 28,580 students in 2022, and approximately 1030 associate degree nursing programs, graduating 85,750 students in 2022.¹⁰⁷⁻¹⁰⁹ The choice of program may be limited by local availability or even educational requirements for entry. Students with a previous degree may have limited

options to select an accelerated nursing program that awards a bachelor's degree or associate degree, both of which result in the ability to become an RN.

Socioeconomic Factors and Race

In the U.S., the issues of race and income are closely intertwined.¹¹⁰ In a social and historical sense, the marginalization of minorities, especially Blacks, has had significant and long-lasting effects on economic opportunity and attainment.^{102,111,112} Educational attainment is a strong precursor to increased income and opportunity.¹⁰⁰⁻¹⁰³ The elementary and secondary education quality is lower for those in poverty and even lower for poor minorities.⁹⁹⁻¹⁰³ A lower percentage of minorities attend college and they have higher dropout rates.¹¹³ The effects of low income are generational, as associated lower educational attainment by one generation leads to lower income, poorer quality education, and reduced educational and economic attainment for the following generation.^{102,111,112}

The intersection of race and SES in the selection of a nursing educational pathway is supported by the findings in this study. LPN/LVN and ADN students have chosen an educational pathway that is shorter than a BSN. Their educational path provides the opportunity to be a nurse in as little as one year. The reasons why LPN/LVN and ADN students chose this path will be discussed more in the section on research aim three.

BSN Students

The focus of the AACN and NLN is to increase the diversity of BSN programs, making BSN programs the benchmark to which the LPN/LVN and ADN students are compared. As discussed, LPN/LVN and ADN students are more racially diverse but reported to be more financially and educationally disadvantaged. To better understand the

differences between the students in the LPN/LVN and ADN groups, a clear description of BSN students is necessary.

The BSN students were notably younger than the ADN and LPN/LVN students with a mean age of 24.7 years old. They were more likely to identify themselves as White. The racial breakdown of the sample included 78.5% White, 7.3% Hispanic, 4.3% AAPI, and 3.2% Black. Per the AACN, the BSN graduates in 2020 were 61.2% White, 10.5% Hispanic, 8.5% Black, and 0.4% AAPI.¹⁰⁹ The study sample includes more White students and fewer minority students than the national data indicates is representative.

The BSN students were more likely to identify as having a higher income than both ADN and LPN/LVN students. They were more likely to have financial support (57.1% versus 21.0% LPN/LVN versus 27% ADN), and far less likely to be working 30 or more hours per week (3.7% versus 23.3% LPN/LVN versus 16.6% ADN).

Overall, the BSN students start from a position of greater financial stability, less financial responsibility, and a reduced need to work during their enrollment. The BSN students exemplify the advantage of being the racial majority and the resultant generational education and opportunity.

Research Aim Two

The purpose of research aim two was to better understand the awareness and motivating factors that led students to select nursing and to determine if there are significant differences by program type.

Awareness Factors

Assessing awareness factors within the conceptual framework provides new information using statistical procedures to understand what awareness factors drive the

decision to select a nursing program. An analysis was done to determine if there is a difference in the endorsement of specific awareness factors by program type.

Overall, when looking at the seven awareness factors, the BSN students gave relatively high rates of endorsement for the awareness reasons for selecting a nursing pathway. As for the other programs (LPN/LVN and ADN), there was a lower level of importance placed on these factors as reasons for selecting the program. Interestingly, even with BSN students highly endorsing the awareness factors, there were no significant differences in awareness factor rankings by program type.

There is no obvious reason for the differences in awareness factors between the BSN, ADN, and LPN/LVN groups. One possibility is a previously unidentified or unconsidered awareness factor that is present in the LPN/LVN student population. Previous studies have not focused on these variables to determine how they factor into career selection for this population. Future research could be done to further evaluate this finding.

Looking at individual awareness factors for the overall sample, the highest-rated factor was having a friend who was a nursing student, followed by having a friend or family member who was a nurse, having someone suggest a career in nursing, wanting to be a nurse since childhood, and learning about nursing at school. The lowest two rated awareness factors across all three program types were that the student had a personal healthcare experience and they had researched career options.

All three of the top awareness factors are relationship-oriented. Having a friend who was a nursing student, having a friend or family member who was a nurse, or having had someone suggest nursing emphasizes the importance of relationships in the process

of career decision-making. Relationships, especially family, are an important resource that impacts the career decision-making process.¹¹⁴⁻¹¹⁶ For more advantaged students, family members have a greater impact in guiding students to make more adept career and higher education decisions.¹¹⁶

Given the lower importance that LPN/LVN students, and ADN students to a lesser extent, ascribe to the awareness factors identified from previous literature review, more research is necessary to better understand the awareness factors for nursing career decision-making of these students.

Motivating Factors

There were seven motivating factors identified from the literature included in the survey. Students rated the relative importance of each effect. A vast majority of nursing students (96.1%) identified wanting to help people as an important motivating factor for choosing a career in nursing. The second most common motivating factor for choosing nursing across all three program types was job security.

LPN/LVN and ADN students rated the advancement opportunities within nursing as a more important factor than BSN students (72.6% versus 69.9% ADN versus 60.7% BSN). It is possible that these students are more likely to have goals of furthering their education to become an RN, in the case of LPN/LVN students, or becoming a BSN, in the case of ADN students.

Of the three groups of students, LPN/LVN students rated the motivating factor that nursing was their first choice of career higher than the other two groups (67.4% versus 53.0% ADN versus 60.2% BSN). ADN students were the least likely to indicate nursing was their first career choice.

In terms of ranking the relative importance for each group of students, income was rated the fourth out of seven motivating factors for ADN students (60.8%), last for LPN/LVN students (41.5%), and last for the BSN students (54.4%).

The higher rating for income and the low rating for nursing as a first choice of career are both consistent with the previously discussed narrative that an unknown but significant percentage of ADN students are making a career change. There is no direct evidence to support the supposition and future research should be directed at better understanding the motivations of ADN students.

Research Aim Three

Research aim three sought to describe the career decision factors of facilitators, barriers, self-efficacy, and emotional support, and then determine if there were significant differences in these factors by program type and by race. Because each program type had differences in facilitators, barriers, and self-efficacy scores, the following addresses these by program not by each variable examined.

Some facilitator and barrier factors exist on a continuum. These factors can be reasonably identified as both a facilitator and a barrier. For example, lack of income is a barrier to access to education. Sufficient income allows the student to worry less about how to pay for school, and possibly not have to work during school. For this reason, income, and related variables like the need to work and financial support are relevant as both potential facilitators and barriers for nursing students.

Due to the findings in racial composition between the LPN/LVN, ADN, and BSN groups, race was added to the analysis for research aim three. The intersection of facilitators, barriers, and self-efficacy by race was considered in the context of nursing

educational pathway to better understand how they fit into the conceptual model. The discussion of the findings is presented below.

LPN/LVN Students

The main barriers noted by LPN/LVN students included financial factors and educational attainment. Most LPN/LVN students stated that becoming an RN (ADN or BSN) was their first choice (69.5%). The data provided indications of potential barriers for the LPN/LVN in demographic factors, SES, increased likelihood of being a first-generation college student, the high degree to which they carry their own financial responsibility, and how many hours students were working.

Financial Barriers

As shown, LPN/LVN students noted lower incomes than ADN and BSN students. LPN/LVN students were the most likely to be whole or partially responsible for meeting their own financial needs (79%). LPN/LVN students were also the most likely group to be working 30 or more hours per week (23.3%). It could be assumed that the need to work what appears to be a full-time work week is to meet the demands of stated financial needs. The financial stressors were reiterated when asked how concerned LPN/LVN students were about various factors during nursing school. These students were more worried about paying for nursing school (79.5%) compared to ADN (70.5%) and BSN (64.7%) students.

LPN/LVN students who indicated they had preferred becoming an RN were asked about barriers they experienced in pursuing an RN. They identified school cost (49.6%) and length of the nursing program (59.5%) as major factors limiting their opportunity to

attend an RN program. As observed in previous literature, career and educational opportunity hinges on financial status.^{100–103,117,118}

As a group, LPN/LVN students are more limited in their educational and career opportunities compared to the other groups, especially the BSN students, as evidenced by SES, the need to work, family commitments, and financial independence. The financial barriers can limit a potential nursing student from attending an educational program that culminates in an RN. This finding would need to be considered when creating better entry pathways into RN programs.

Impact of Program Choice on Potential Earnings

The scope of practice for an LPN/LVN varies by state but is generally more restrictive than for RNs.¹¹⁹ An LPN/LVN typically works under the supervision of an RN as regulated by state nursing boards. LPN/LVNs median pay in 2022 was \$26.26 per hour and \$54,620 per year. For RNs in 2022, the income rises to \$39.05 per hour and \$81,220 per year. That is 32.8% less annual income for LPN/LVNs. The income disparity between LPN/LVNs and RNs, coupled with the racial disparity, only serves to reinforce the existing national racial income inequalities.^{105,110,120}

Barriers to Entry and Success in an RN Program

Some LPN/LVN students indicated they were unable to obtain admission into an RN program (29.8%). In addition, most LPN/LVN students (86.5%) endorsed concerns regarding their ability to succeed in their current nursing program.

When looking further into this barrier about having the ability to succeed, prior educational experiences would need to be examined. While this study did not collect data regarding academic preparedness and type of secondary school district, the national data

trends show that the lower socioeconomic school districts in the U.S. often lack adequate funding for career building and have the most diverse student populations.^{101–103,121} The presence of funding inequalities is known to negatively affect educational outcomes.^{99,100,103} Additional research is needed to determine if lower socioeconomic and underrepresented students face direct and indirect obstacles to goal attainment manifested by the effects of income inequality.

ADN Students

Financial Barriers

While ADN students endorsed better SES compared to LPN/LVN, this group had lower SES compared to BSN students. ADN students have more financial support compared to LPN/LVN students, with 27.5% of ADN students having some financial support other than themselves versus 20.7% of LPN/LVN students. However, 57.1% of BSN students indicated that they have someone else who at least partly supports them financially. ADN students were more likely to be working 30 or more hours per week (16.6%) versus BSN students and were less likely to not be working at all (23.3%) compared to BSN students (32.0%). Adding to the picture of financial stress, ADN students had greater concern than BSN students about how to pay for school (77.4%).

The results indicate that ADN students may need more financial support to enter into a BSN program. The results provide a better understanding of what supports are needed for ADN students to consider enrollment at the BSN level.

Barriers of Program Duration, Family Obligations, and Ability to Succeed

The majority of ADN students were concerned about the length of time in school (77.4%). These students were also the most likely to be concerned about their family

obligations while in school (73.7%). This was higher in the ADN group compared to the BSN group.

The ADN group also had concerns about the ability to succeed in school (79.3%). This could be due to the time commitments that nursing students must make in their education coupled with the increased financial concerns and personal obligations for ADN students noted in the survey. This is a new finding that shows many factors influencing the decision-making process when selecting a nursing program educational pathway.

The duration of the programs is also a repeated concern for both LPN/LVN students and ADN students. It could be concluded that the cost and duration of a program are linked, as are concerns about financial and family obligations. The duration of a program relates to cost. Though the cost of education can vary significantly from institution to institution, in the academic year 2021-2022, the average cost of a two-year degree was \$11,976 compared to \$30,031 for a bachelor's degree, supporting the idea that some students will choose a shorter educational pathway that is less expensive.¹¹⁸

Compared to the LPN/LVN and BSN groups, the ADN group findings indicate that the number and type of barriers noted in this discussion are fewer compared to the LPN/LVN students and greater than the BSN students. These are important findings to understand that ADN students ultimately obtain the RN degree but still have barriers to entering directly into a BSN program. If the goal is to increase diversity and the number of BSN-prepared nurses, then accounting for these findings in programs is essential.

BSN students

Financial Facilitators and Barriers

BSN students endorsed greater financial stability and fewer financial barriers. BSN students had significantly more financial support compared to the other groups, with the highest percentage of both middle (79.5%) and high-income students (12.9%). BSN students were the most likely to have financial support either completely (12.9%) or partly (44.2%) by someone other than themselves. BSN students are the most likely not to be working compared to the other educational groups (32.0%). If BSN students do work, they are most likely working less than 16 hours a week (37.1%).

BSN students endorsed the lowest level of concern about paying for school (64.7%), having to support or care for a family (39.3%), and the length of time a nursing program takes (53.9%). BSN students were far more likely to come from a home with at least one parent with a bachelor's degree (63.4%) than the LPN/LVN (32.9%) or ADN (37.7%) students. These findings indicate significantly less financial stress and commitment on the part of the BSN students.

For BSN students, their financial status seems to be a relative facilitator. That is not to say there were no financial concerns for these students, but that students expressed fewer concerns compared to the other two groups. BSN student financial status could allow students to pursue what is typically the highest entry-level degree for nursing (except for the less common master's degree entry programs).

In addition, BSN students were the most likely group of students to indicate they had wanted to be a nurse since childhood (74.2%), significantly higher than ADN students (65.0%) and LPN/LVN students (48.5%). When viewed through the lens of

income and opportunity, it could be concluded that BSN students have fewer barriers to achieving their noted goal of becoming a nurse.

Self-Efficacy

This is the first study that looked at self-efficacy as a factor in selecting a nursing educational pathway. Prior literature in other careers noted that higher self-efficacy improves career decision-making and academic outcomes in higher education.¹²²⁻¹²⁷

The LPN/LVN scored significantly higher on the measure of GSE. A potentially confounding factor of this finding is the age of the students in the sample. Comparing the mean ages within the sample, LPN/LVN (29.5 years old) and ADN (30.6 years old) students were significantly older than the BSN students (24.7 years old) in the sample. It is possible that self-efficacy increases with age, but no evidence was found to support this trend regarding age and a correlation with self-efficacy. However, the ADN students were also significantly older than the BSN students, but not found to have higher levels of self-efficacy.

Self-efficacy is known to be an important factor that mediates academic performance and goal attainment. Specifically, in one prior study, self-efficacy was positively associated with academic achievement in Black students.¹²⁸ Higher levels of self-efficacy are associated with the increased first semester GPA of first-year college students.¹²⁹ Additionally, increased self-efficacy is related to retention rates in first-generation students.^{78,127} Higher levels of self-efficacy are associated with increased academic success.

When considering the findings of self-efficacy with what we know about the sample of LPN/LVN students the findings might be related to the age of the sample, but

another possible explanation is that the students that were able to gain admittance into their LPN/LVN nursing program overcame more barriers and more challenges than the students that comprised the ADN and BSN programs. Keeping in mind that the LPN/LVN students were of the most likely to be Black, have the lowest income, the most likely to not have a parent with a four-year degree, most likely to be working fulltime, and the most likely to be responsible for their own finances, the differences in self-efficacy might be biased toward the successful student. Given the disparate life starting position, especially for Black students, it is possible that successful admission to an LPN/LVN program required more self-efficacy than students that had entered ADN and BSN programs.

Differences by race. When looking at self-efficacy by racial category, there were noted differences in GSE by race. The findings indicate that Black students had higher self-efficacy than Hispanic students. Hispanic students had greater self-efficacy than White students. It is unclear why the underrepresented students had higher self-efficacy as there are no studies for comparison. However, findings could help understand better messaging and supports needed to capitalize on this finding to recruit underrepresented minorities groups into BSN programs. The finding also supports the idea that self-efficacy is a concept in need of further investigation.

Barriers and Facilitators and Race

Within this aim, there were several descriptors of the three groups of students that suggested differences that were a factor of race in addition to what had been discussed regarding income and financial security. The sample of LPN/LVN nurses was more racially diverse than the sample of ADN and BSN groups. The ADN students were, in

turn, more racially diverse than the BSN students. These differences lie at the intersectionality with SES and the role of financial status as a facilitator or barrier.

When looking at the data by race, racial minority nursing students were less likely to have a parent with a four-year degree ($p < 0.001$) and more likely to identify as having a lower income ($p = 0.029$). They were also more likely to have concerns about how to pay for school ($p = 0.45$), concerns about the length of the program ($p = 0.010$), and concerns about how to support their family during school ($p < 0.001$).

Racial minority students were also significantly more likely to be concerned about their ability to succeed in nursing school ($p = 0.030$). This is contrasted by the findings that there were higher GSE scores in LPN/LVN and ADN student groups. Although these students indicated greater concern about their ability to succeed in nursing school, they also showed higher levels of self-efficacy than their BSN student counterparts. It may be that their perceived self-efficacy helps them overcome their obstacles.

In looking at findings in aims one, two, and three, the differences in income and education are factors that seem to be important aspects of nursing pathway selection. U.S. census data shows that income is lower in racial minorities in the U.S. and many of the barriers and concerns for minority nursing students could be a result of lower income and greater financial insecurity.^{110,120} Even the educational worries about their ability to succeed in nursing school can be traced back to income disadvantage and educational inequality.^{99,100,103,118} The data results from this study support previous literature that identified factors, such as income affecting educational attainment, are also significantly associated with race. In sum, the main barriers by race are important indicators for future

programs to consider when building more diverse programs to determine better financial support for racial minority students.

Research Aim Four

This aim sought to identify predictive factors for the selection of an educational pathway. The results from the three binary logistic regressions predicting LPN/LVN versus ADN, LPN/LVN versus BSN, and ADN versus BSN are below.

LPN/LVN Predictors

The logistic regression assessment for predictors to become an LPN/LVN student over an ADN or BSN student identified three significant predictors. Those predictors were concern about the need to support a family ($p=0.007$, $OR=0.737$, 95% CI [0.590, 0.919]), concern about their ability to succeed ($p=0.010$, $OR=0.735$, 95% CI [0.582, 0.928]), and GSE scores ($p=0.014$, $OR=1.038$, 95% CI [1.007, 1.070]). These predictors reflect what has been discussed previously, with increased concerns about family obligations and educational ability coupled with elevated GSE in the LPN/LVN sample.

While the results were statistically significant, the Nagelkerke R^2 is relatively low for the model, explaining only 12.8% of the variance, suggesting there are additional variables other than the ones in the model that explain why students choose this type of program. Additionally, the results do not provide any additional explanation of the LPN/LVN group when looking at the predictive factors that have not already been explored and discussed in the previous aims.

ADN Predictors

In the logistic regression assessing for predictors to become an ADN student over an LPN/LVN or BSN student four significant predictors were identified. The predictors

were age ($p=0.002$, $OR=1.045$, 95% CI [1.016, 1.075]), concerns about paying for school ($p=0.010$, $OR=1.267$, 95% CI [1.059, 1.516]), concerns about the duration of school ($p=0.002$, $OR=0.734$, 95% CI [0.605, 0.891]), and having a parent with a four-year degree ($p=0.018$, $OR=0.598$, 95% CI [0.390, 0.917]).

The sample percentages of parents with a degree and mean age were similar in both the LPN/LVN and ADN student groups, with notable differences compared to the BSN students. However, the absolute number of LPN/LVN students ($n=146$) was less than ADN students ($n=223$), possibly explaining their inclusion in the ADN model.

Much like the LPN/LVN model, the results were statistically significant and the Nagelkerke R^2 is relatively low for the model, explaining 18.9% of the variance. As before, the results reaffirm and support the trends previously reported in aims one through three. This suggests there are other variables not evaluated that explain or predict why students select this pathway.

BSN Predictors

In the logistic regression assessing for predictors to become a BSN student over an LPN/LVN or ADN student, seven variables were significant. Significant predictors were age ($p=0.001$, $OR=0.951$, 95% CI [0.923, 0.980]), race ($p=0.003$, $OR=0.622$, 95% CI [0.456, 0.850]), parent with a four-year degree ($p=0.018$, $OR=1.646$, 95% CI [1.090, 2.486]), amount working ($p=1.218$, $OR=1.218$, 95% CI [1.000, 1.484]), concerns about paying for school ($p=0.002$, $OR=0.757$, 95% CI [0.634, 0.905]), concerns about supporting a family ($p<0.001$, $OR=1.383$, 95% CI [1.168, 1.639]), and general self-efficacy ($p=0.028$, $OR=0.972$, 95% CI [0.948, 0.997]).

Overall, the results were statistically significant and the Nagelkerke R^2 is somewhat higher than the other models, explaining 31.4% of the variance. The increased accuracy of the model may be because many of the demographic similarities of the LPN/LVN and ADN student groups (older, more racially diverse, more first-generation students, and lower SES) are grouped together in this model. Because the model identifies seven variables as significant, there appears to be more utility in its interpretation.

Per the model, the probability that a student is in the BSN pathway is increased with younger age, White race, having a parent with a four-year degree (i.e., not a first-generation college student), working less, less concerned about paying for school and supporting a family, and lower GSE scores. Overall, the study data indicates that older age, minority race, first-generation college student, and working more weekly hours are clear barriers to becoming a BSN student and predictors of being an LPN/LVN or ADN student.

The data findings support the new knowledge generated by aims one through three that have not been presented in the literature to date. The findings can help form a better conceptual model to help understand reasons for selecting a nursing educational path.

Revised Conceptual Framework

This study sought to better understand the factors associated with choosing a career in nursing, while also examining the differences present in students from the three educational pathways. Based on the outcomes of the study, revisions to the framework can be proposed. Data from aims one through three provided descriptive data and

highlighted the differences in the groups. However, much of the data from aim four did not produce high levels of explanation through the variance findings.

While the awareness and motivating factors did not describe meaningful differences between the groups of nursing students, they were all well-endorsed in the findings and warrant continued inclusion in the framework.

Emotional support was not significantly different between the groups. Without a non-student-nurse sample for comparison, it is unclear if nursing students have levels of emotional support different than non-nursing students.

The role of gender in the framework should be considered because being male may have gender-specific barriers to entry. The inclusion of perceptions of nursing as a career could be an important factor to include in the contributing factors part of the framework.

The framework describes the contributing factors that lead to nursing as a career choice but does not describe the effect of those factors on the educational pathway outcome. The framework will continue to evolve and could be separated for each pathway within nursing since there were differences in why students selected those pathways based on the findings. A trifurcated framework would provide for the effects of financial and educational factors to be better described in the outcomes. Future work on the framework could also include the perspectives of those who desired to become nursing students but were unable to overcome their relevant barriers.

What is important is that as a discipline, if the national calls to action to increase diversity within BSN education, a framework that includes interventions that provide financial support, flexibility for family obligations, shorter programming, and ability to

work may help to improve outcomes by allowing those that face the greatest barriers to achieve their goal of becoming a nurse.

Limitations

This study had several limitations that could have impacted the findings. This was a cross-sectional study with important inherent limitations to consider. There could have been an issue with retrospective recall regarding answering the survey questions. The participants were answering the survey items and recalling their feelings, motivations, and thoughts about a decision that had already been made years prior to completing the survey. The students' perceptions or motivations might not be static. Specifically, the retrospective nature of survey responses during the decision-making process by the participant may contain errors of memory or perception. This possibility is a potential limitation of the study as it may skew the results in unpredictable ways.

There was a lack of homogeneity in both the GSE and emotional support data. The lack of similar distributions may be significant and indicate an error in the data-gathering process. A repeated sampling of students using these instruments would help reduce the heterogeneity issue.

Students who were enrolled in a BSN accelerated program were not separated from the traditional BSN students. This added difficulty in describing the traditional BSN students as well as comparing the accelerated BSN students with the returning ADN students. Future studies should include this distinction.

It is possible that the questions that were asked of the student missed the description of important factors that had not been previously described in the literature.

Future research should be directed at better understanding the decision-making process of the LPN/LVN and ADN students.

By emailing a request to academic settings for participation there could be possible problems with sufficient sampling. Since random sampling is not being used, there is the potential that the study results may not be generalizable to all nursing students since each participant self-selected to be a subject in the study. While every effort was made to make the sample representative it is possible there were overlooked factors influencing results.

Implications for Future Research

The AACN and NLN both hold strong positions advocating for increased diversity in nursing.^{13,14} A diverse workforce improves healthcare outcomes, especially for those patients who may typically experience bias resulting in inferior medical outcomes.¹³⁰⁻¹³³ The nursing profession has long been a profession made up of predominantly White women.^{15,73} Despite calls for increasing diversity in nursing there is no clear path to achieving that outcome. This study has shown the more racially diverse students in LPN/LVN and ADN programs face greater challenges in education goal attainment. Interventions to improve the diversity of BSNs can focus efforts to support those who wish to be nurses, with barriers preventing them from participating in BSN programs.

LPN/LVNs

LPN/LVNs have previously been identified as being more diverse than the national population of RNs.^{134,135} This study has shown that these students make up the poorest group of nursing students, with financial and education barriers impeding their

ability to become nurses. Movement toward a more diverse BSN population should extend to inclusion of the students and nurses that have already declared a desire to be nurses. There are two apparent strategies to elevate the diversity inherent in the LPN/LVN population and support them toward becoming BSNs. One is to bridge practicing LPN/LVN's education to become BSNs or put in place interventions to assist the pre-nursing students that otherwise end up in LPN/LVN programs.

Many LPN/LVN programs are housed in community colleges. Often these community colleges do not have BSN programs, though they may have ADN programs. It is the role of the community college to identify and offer support to students who may be at risk of being unsuccessful in entering an ADN program.

Currently, a small minority of LPN/LVNs advance their education to become RNs. A study in North Carolina found that 8.0% of LPN/LVNs made the transition in a 12-year period.¹³⁶ Educational bridge programs have been done in a few locations, using different strategies. An LPN/LVN to BSN program, used an online, self-paced approach, building on an existing RN-BSN curriculum.¹³⁴ A program in Canada allowed for established and practicing LPN/LVNs to take prerequisite courses, followed by short clinically intensive course to prepare them for the transition and allow them to sit for the NCLEX to become RNs.¹³⁷ A program implemented in New York State allows for qualified practicing LPN/LVNs to enter an ADN program as advanced placement students. The admitted students had similar pass rates on the NCLEX and were more racially diverse than the traditional students.¹³⁸ Resourced educational institutions committed to increasing the diversity of nursing are in a position to support the advancement of education for LPN/LVNs.

ADNs

Students graduating with an ADN become RNs upon passing the NCLEX-RN examination. As a proportion of graduating nurses, BSNs are becoming more common than ADNs. Most nurses are entering the profession with a BSN or entry-level master's degree.¹³⁹ As of April 2023, 71.3% of RNs have a BSN or higher degree.¹³⁹

The path to becoming a BSN for these nurses is to complete an RN-BSN program that confers a bachelor's degree on completion. There are 747 RN to BSN and 195 RN-MSN programs in the United States.¹⁴⁰ There is a nationwide push toward elevating the education preparedness for all nurses.¹³⁹ A medical environment with more BSNs has been shown to have better medical outcomes for patients, including lower mortality, shorter lengths of stay, and lower readmission rates.¹⁴¹⁻¹⁴⁴ To this end, New York State passed a law in 2017 requiring all RNs to obtain their BSN within 10 years of initial licensure.

The national drive to increase educational preparedness will likely have positive effects on diversity, as the more diverse ADN population is integrated into the BSN population. Based on the new knowledge presented in this dissertation, there are emergent questions that indicate potential future research directions to help build effective programs to create more diverse student populations in each of the three nursing pathways. By understanding how to increase diversity, the long-term goal will be to better produce a nursing workforce that matches the diverse needs of the healthcare setting.

Descriptive Work

Some descriptive research would be useful in several areas related to the findings and subsequent questions raised in this study. Do minority students participate in RN to BSN programs at higher rates than White ADN graduates? How do LPN/LVN and ADN students perceive their placement in their respective programs in the context of race and SES? What is the level of interest and potential barriers for LPN/LVNs in going back to school to attain their ADN or BSN?

Bridge Programs

Based on the findings from this study, there are higher numbers of underrepresented minorities in the LPN/LVN and ADN programs. Based on current literature, there are few bridge programs that focus on LPN/LVN to RN or LPN/LVN to BSN educational pathways. To increase diversity, building effective bridge programs could transition the racial diversity already present in the LPN/LVN population to the RN population.

Support Programs

Given the role of community colleges in providing LPN/LVN and ADN education, they play an important part in the process of educating minorities and increasing the diversity of nursing. How can community colleges support at risk students through admission and into their nursing programs? How can community colleges help to prepare their graduates to continue their educational journey to ADN or BSN and beyond?

Conclusions

This study sought to provide new data regarding the differences between students who selected LPN/LVN, ADN, and BSN programs in terms of demographic factors as well as reasons for choosing nursing and their group facilitators and barriers in making those choices. One of the goals, based on the McCord Nursing Career and Educational Decision Pathway Conceptual Framework was to determine if there were racial differences among these factors. These results show that LPN/LVN students faced the greatest barriers to goal attainment, composed of income and educational factors. ADN students also faced significant barriers of lower income and increased worries about their ability to work, support a family, and pay for school. Racial diversity appears to be a big component of the financial and educational status of the students in these programs. Future research could focus on increasing diversity in nursing by focusing on how to overcome the inherent financial and educational disparities that are inherent within these groups of students.

APPENDIX

Tables and Figures

Table A-1

Results of Integrative Review #1

| Authors | Year | Type of study | Sample | Population | Theory | Findings |
|--|------|---------------|--------|---|--------|--|
| Larsen, P. D., McGill, J. S., & Palmer, S. J. | 2003 | Quantitative | 495 | Nursing students at three North Carolina programs | None | Past experience with a loved one or self being hospitalized (71.7%) / Past health care work experience (65.6% / Family member or friend who was a nurse (65.3%) / A nurse role model (53.3%) / Television/media (21.6%) / Marked "other" helping/religio |

| Authors | Year | Type of study | Sample | Population | Theory | Findings |
|-----------------------------------|------|---------------|-------------------------|------------|--|---|
| | | | | | | us (calling) / variety- flexibility- security-money / childhood dream Serve or help others (46.6%) Desire to work in healthcare/med icine (26.0%) Believe to be called or led (11.5%) Practical reasons (flexibility/job security) To make a difference (4.6%) |
| Prater, L., & Mcween, M. | 2006 | Quantitative | Cross-sectional surveys | 131 | Nursing students at a single faith-based university | None |

| Authors | Year | Type of study | Sample | Population | Theory | Findings | |
|---|------|---------------|------------|------------|---|----------|--|
| Somers, M. J., Finch, L., & Birnbaum, D. | 2010 | Qualitative | Interviews | 31 | Nursing students in the Southern US | None | 1. Relationships with practicing nurses exposed and influenced the choice of nursing. 2. attractive because it offered the opportunity to apply knowledge to help others and gain a sense of mastery over complex problems 3. job prospects, job security, career mobility (location and flexibility), and salary |

| Authors | Year | Type of study | Sample | Population | Theory | Findings |
|-----------------------------|------|---------------|--------|--|---|--|
| Zysberg, L., & Berry, D. M. | 2005 | Quantitative | 160 | Nursing students at three nursing programs Northwest/midwestern US | Holland and Roe Career Choice Theory Maslow's Hierarchy of Needs. | Both genders appear to value congruence. / Identified Reasons (totals only) - these are displayed as means on a 0-100 scale: Great career opportunity (80.06), fits personality and character (76.68), fits family and other commitments (69.67), a profession that is in demand (62.83), can work part-time or shifts |

| Authors | Year | Type of study | Sample | Population | Theory | Findings |
|----------------|-------------|----------------------|---------------|-------------------|---------------|---|
| | | | | | | (62.36), I can express myself |
| | | | | | | (61.21), respectable profession |
| | | | | | | (58.91), others told me I'd be a good nurse |
| | | | | | | (57.88), think I can be a leader in the field |
| | | | | | | (54.19), it's good money |
| | | | | | | (53.50), no unemployment in nursing |
| | | | | | | (35.17) |

Table A-2

Data Extraction Integrative Review #1

| Reasons for Choosing Nursing | No. of Studies |
|-------------------------------------|-----------------------|
| Job security | 4 |
| Flexibility | 4 |
| Desirable income | 3 |
| Career opportunities | 2 |
| Helping others | 2 |
| Relationship with a nurse | 2 |
| Religious call/calling | 2 |

Table A-3***Results of Integrative Review #2***

| Article | Purpose | Mode of intervention | Sample | Theory | Findings |
|--|--|---|--|---------------|--|
| Craft-Blacksheare, M. (2018) | A program to support underrepresented second-degree nursing students. | Scholarships and mentoring. | 20 diverse second-degree nursing students. | None | All students graduated and 19 passed the licensure exam. |
| Butler, L., Ampadu, J. (2022) | To expose underrepresented minority students to dental, nursing, and pharmacy careers. | Summer camp immersion for high achieving high school students interested in healthcare. | 87 High school students. | None | Improved understanding of pharmacy, dental, and nursing careers. |
| Christian, L., Cater, G., Dieujuste, C. (2020) | To increase the retention, graduation, and NCLEX pass rates of minority students. | Mentoring from a minority nursing professional. | 221 BSN nursing students, and 57 FNP students. | None | 94% of participants passed the NCLEX on the first attempt. The |

| Article | Purpose | Mode of intervention | Sample | Theory | Findings |
|---|--|---|---|--------|---|
| | | | | | program experienced 1% attrition. |
| Diefenbeck, C., Klemm, P. (2020) | A funded retention program developed to address the needs of underrepresented minority students. | Scholarships, financial support, retention specialist, tutoring, emotional support, and peer mentoring. | 29 BSN students | None | 87.5% first time NCLEX pass rate, 3.18 mean GPA, 25/29 graduated or still enrolled in university. |
| Jung, D., Latham, C., Fortes, K., Schwartz, M. (2020) | Implementation of holistic measures for prospective prelicensure nursing student admissions. | Holistic admissions using non-academic measures for admission to the nursing program. | 1920 second degree nursing program applicants | None | Increased diversity of admitted students over five-year time period. |

| Article | Purpose | Mode of intervention | Sample | Theory | Findings |
|--|---|--|--|------------------------|---|
| Kowlowitz, V., Rowsey, P. J., Woods-Giscombe, C. L., Kneipp, S. M., Page, J., & Gray, T. F. (2018) | Program with the goal of increasing diversity in the nursing program by supporting underrepresented students. | UNC program supported minority pre-nursing students, offered scholarships, mentoring, and tutoring into the nursing program. | 201 underrepresented pre-nursing and nursing students. | Jeffreys' s NURS Model | The pre-entry preparation was successful in regard to admission. Students appreciated tutoring. Retention of program students was high. |
| Lewis, Lisa | To create a program of support for diverse nursing students in the program. | Peer mentoring between higher-level nursing students and self-selected diverse mentees. | 22 diverse second-degree nursing students. | None | All students involved in the mentorship program were retained in the program. Mentees agreed they had benefited |

| Article | Purpose | Mode of intervention | Sample | Theory | Findings |
|--|---|--|---|--------|--|
| | | | | | from the relationship. |
| Metcalfe, S. (2016) | The purpose was to administer the case scenarios to students in the five high schools in the counties and the Native American reservation surrounding the University. | The virtual environment exposed students to nursing. | 300 high school students: rural and Native American | None | Student ratings were 92% positive about the use of the program. Faculty ratings were 93% positive. |
| Metcalfe, S. E., Lasher, R., Lefler, L. J., Langdon, S., Bell, R., | The goal is to produce a more diverse health care workforce by building an undergraduate pipeline. | A pipeline that uses a mentoring program with scholarships and stipends. | 22 pre-nursing/nursing students. | None | Of the 22, 16 were still progressing in their studies. |

| Article | Purpose | Mode of intervention | Sample | Theory | Findings |
|--|---|---|--|--------|--|
| & Hudson, D. (2017) | | Mentors are practicing RNs. | | | |
| Murray, T. A., Pole, D. C., Ciarlo, E. M., & Holmes, S. (2016) | The purpose was to increase the recruitment and retention of underrepresented minorities through support through the nursing program. | High school clubs to raise awareness, hired a retention specialist advisor, provided tutoring, mentoring, and scholarships. | 392 high school students, 21 students enrolled in the nursing program, 185 students supported by a retention specialist. | None | At-risk students' GPA increased year over year with support of retention specialist. Retention for these students was described as positive. |
| Travers, J., Smaldone, A., & Gross Cohn, E. (2015) | Compares states that used legislation to increase diversity with | Evaluate data across various states to compare the | Data from 14 states, 7 with legislation to support diversity and 7 without. | None | Targeted legislation increased diversity in |

| Article | Purpose | Mode of intervention | Sample | Theory | Findings |
|-------------------------------------|--|--|--|--------|---|
| | those that did not. Greater gains seen when policy supports diversity. | effect of legislation to fit the purpose of the study | | | nursing programs. |
| Vignato, J. A., & Guinon, T. (2019) | A program was created to increase preparedness for at-risk high school students as they start healthcare studies at community college. | Student support included advisors, tutoring, and counseling. Focus on two English courses. | 30 high school students, 57% Hispanic. | None | Retention rates in basic English courses were improved from 72 to 93 %, the follow up course retention improved from 66 to 96%. |

Table A-4***Data Evaluation Integrative Review #2***

| Study | Rigor | Relevance | Total |
|---|--------------|------------------|--------------|
| Craft-Blacksheare (2018) | 3 | 3 | 6 |
| Butler & Ampadu (2022) | 3 | 3 | 6 |
| Diefenbeck & Klemm (2020) | 3 | 3 | 6 |
| Jung, Latham, Fortes, & Schwartz (2020) | 3 | 3 | 6 |
| Kowlowitz, Rowsey, Woods-Giscombe, Kneipp, Page, & Gray (2018) | 2 | 3 | 5 |
| Murray, Pole, Ciarlo, & Holmes (2016) | 2 | 3 | 5 |
| Lewis (2021) | 2 | 3 | 5 |
| Christian, Cater, & Dieujuste (2020) | 2 | 3 | 5 |
| Metcalfe, Lasher, Lefler, Langdon, Bell, & Hudson (2017) | 1 | 3 | 4 |
| Vignato & Guinon (2019) | 2 | 2 | 4 |
| Travers, Smaldone, Cohn (2015) | 3 | 1 | 4 |
| Metcalfe (2016) | 1 | 2 | 3 |

Table A-5

Comparison of Interventions Integrative Review #2

| Study Interventions | Raising Awareness | Pre-entry Dissemination | Holistic Admissions | Scholarship | Tutoring | Mentoring | Targeted Advising |
|---|--------------------------|------------------------------------|--------------------------------|--------------------|-----------------|------------------|--------------------------|
| Craft-Blacksheare, M. (2018) | | X | | X | | X | |
| Butler, L., Ampadu, J. (2022) | X | | | | | | |
| Christian, L., Cater, G., Dieujuste, C. (2020) | | | | | | X | |
| Diefenbeck, C., Klemm, P. (2020) | | | | X | X | X | X |
| Jung, D., Latham, C., Fortes, K., Schwartz, M. (2020) | | | X | | | | |
| Kowlowitz, V., Rowsey, P. J., Woods-Giscombe, C. L., Kneipp, S. M., Page, J., & Gray, T. F. (2018) | X | X | | X | X | X | X |
| Lewis, Lisa (2021) | | | | | | X | |
| Metcalfe, S. (2016) | X | | | | | | |

| Study Interventions | Raising Awareness | Pre-entry | Holistic | Admissions | Scholarship | Tutoring | Mentoring | Targeted Advising |
|--|-------------------|-----------|----------|------------|-------------|----------|-----------|-------------------|
| Metcalf, S. E., Lasher, R., Lefler, L. J., Langdon, S., Bell, R., & Hudson, D. (2017) | | X | | | X | | X | |
| Murray, T. A., Pole, D. C., Ciarlo, E. M., & Holmes, S. (2016) | X | | | | X | X | X | X |
| Vignato, J. A., & Guinon, T. (2019) | | X | | | | | | |

FIGURES

Figure A-1

PRISMA Diagram Integrative Review #1

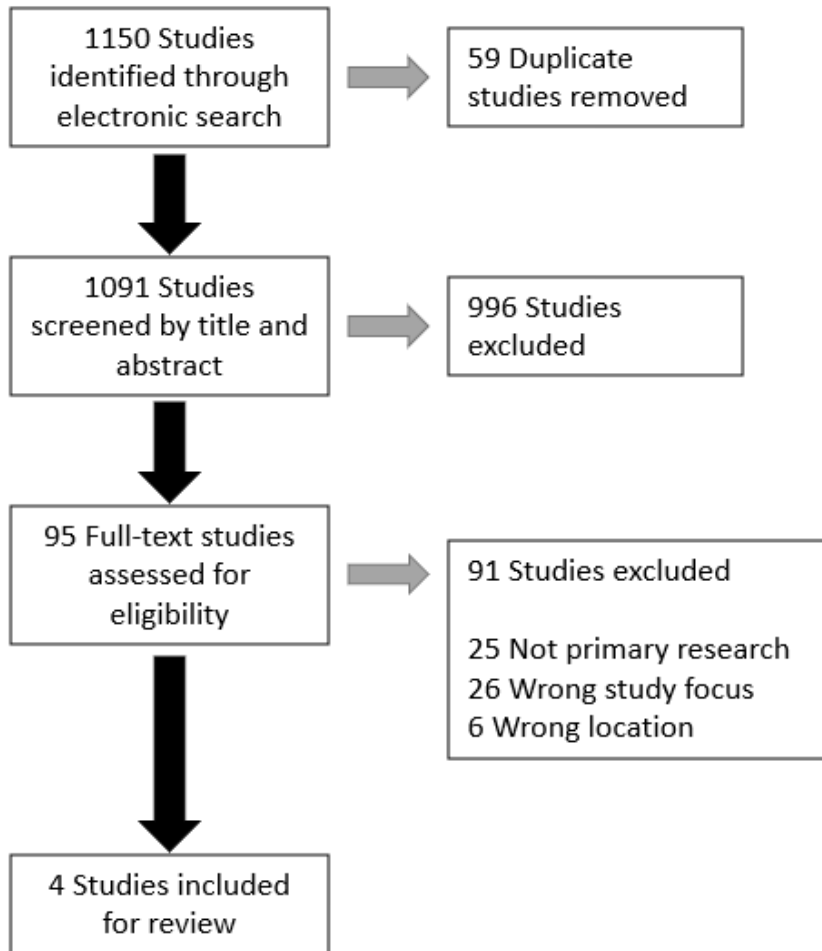
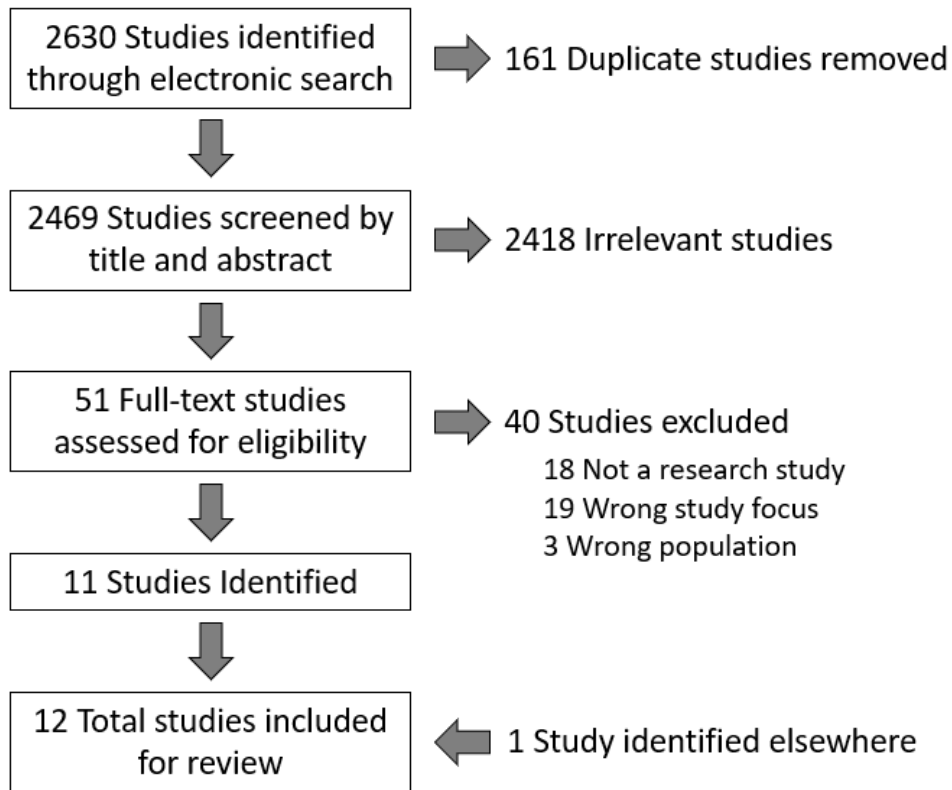


Figure A-2

PRISMA Diagram Integrative Review #2



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CURRICULUM VITAE

Geoffrey Aaron McCord

Education

Nursing PhD. Indiana University, earned at Indiana University-Purdue University

Indianapolis, Indianapolis, IN, 2024

Nursing M.S. Ball State University, Muncie, IN, 2011

Biology B.S. Indiana University Purdue University, Fort Wayne, IN, 2003

Nursing A.S. Indiana University Purdue University, Fort Wayne, IN, 2003

Professional Experience

Indiana University Fort Wayne, Clinical Assistant Professor, 2018-Present

Indiana University Purdue University Fort Wayne, Clinical Assistant Professor, 2017-

2018

Indiana University Purdue University Fort Wayne, Visiting Lecturer, 2016-2017

Indiana University Purdue University Fort Wayne, Limited Term Lecturer, 2015-2016

Conferences Attended

Parkview Nursing Research Symposium, November 2023

Alliance Showcase, November 2023

Midwest Nursing Research Conference, March 2023

Summer Institute for Scholarship of Teaching and Learning, May 2023

Alliance Showcase, November 2022

National League for Nursing Summit, September 2022

Fort Wayne Teaching Conference, August 2022

National League for Nursing Summit, September 2021

Fort Wayne Teaching Conference, August 2021

Parkview Nursing Research EBP Symposium, November 2019

Fort Wayne Teaching Conference, August 2017

Publications

Interventions to Increase the Diversity of Nursing Programs: An Integrative Review,
Accepted and awaiting publication.

Poster Presentation: Nursing Education Interventions to Increase Diversity: An
Integrative Review

Poster Presentation: Factors and Influences on the Career Decisions of Diverse Nursing
Students

Poster Presentation: An Expansion on the Minute Paper

Poster Presentation: Men, Nursing, and Gender Role Conflict: An Integrated Review

Podium Presentation

Podium Presentation: Strategies to Improve the Classroom Environment