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Nursing Student Success: A Research Review

Dr. Watson Scott Swail

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About the Author

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Dr. Swail is a prolific writer with over 95,000 followers on LinkedIn who enjoy his occasional **Swail Letter on Higher Education**. He has published several books, including **The Student Success Papers** (2019), **From Thought to Action** (2019), **Stop Making Sense: A Collection of Thoughts and Other Random Musings on Education** (January 2018), **Educated Thoughts** (2015), **Finding Superman: Debating the Future of Public Education in America** (2012), **Retaining Minority Students in Higher Education** (2003), and **Memory, Reason, and Imagination: A Quarter Century of Pell Grants** (1998). **The ROI of Higher Education** is set for release in 2025.

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Executive Summary

This research review was conducted for a nursing school in the Midwest of the United States. Two components of this study are included in this report. The first is an extensive review of the research literature, which reviewed 228 articles, papers, and reports. The second was a series of interviews with nursing faculty and stakeholders at the institution.

Nurses comprise the largest segment of the healthcare profession in the United States totaling approximately 4.2 million registered nurses (RNs) and almost one million licensed practical nurses (LPN)s and licensed vocational nurses (LVNs) (Smiley et al., 2021). Still, the US Bureau of Labor Statistics (BLS) projects that more than 3 million RNs would be needed by 2024 (Smith-Wacholz et al., 2019, p. 328). This gap has been created through a combination of an aging/retiring workforce, high nursing student dropout rates, and the lack of nursing program openings across every state in the country.

Further contributing to this problem is that 38 percent of qualified applicants are turned away from Associate Degree in Nursing (ADN) programs and 29 percent from Bachelor of Science in Nursing (BN or BSN) programs (Eudy & Brooks, 2021). In addition, 50 percent of students in nursing programs in the United States leave their program before completion, many of whom leave during the first semester (Everett, 2022). Higher attrition rates among nontraditional students, including older students, minority students, and students from other underrepresented populations, contribute to this dearth of nursing students and nurses in the workforce (Everett, 2022, p. 1).

The lack of qualified nurses is in part dependent on three issues: the diversity of nursing candidates and students; the poor retention and graduation rates of nursing programs; and low NCLEX pass rates, especially for non-traditional populations, including students of color.

Diversity in Nursing. In 2004, the Sullivan Commission surmised, "If the trends continue, the health workforce of the future will resemble the population even less than it does today" (Sutherland et al., 2007, p. 347). The 2018 National Sample Survey of Registered Nurses (RNs) found that non-White RNs represented only a quarter of the profession, with 10.2 percent of Hispanic background and 7.8 percent Black. Others have made similar prophesies: "Increasing diversity in the nursing workforce has been cited as key to decreasing long-standing health disparities in the United States" (Osakwe et al., 2022). The AACN stated that a diverse workforce is connected with optimal patient outcomes due in part to the fact that minority health care workers are more likely to work in underserved areas that are majority minority (Eudy & Brooks, 2021; Latham et al., 2016).

In order to stem this inequity across the nursing profession, Denham et al. (2018) stated that the way to address the ethnic and racial diversity challenges in nursing requires the profession to "innovate strategies to recruit, retain, and graduate nurses from diverse ethnic and racial populations." Strategies that focus on communications, learning needs, cultural differences, and social-emotional support are important to increase the success of nursing students from diverse backgrounds (Everett, 2022; Hansen & Beaver, 2012; Jeffreys, 2012; Onovo, 2019).

Retention/Graduation. There exists a significant problem of retaining and graduating nursing students, regardless of type of nursing program. However, ADN programs have much more severe challenges compared to BN programs. The Association of Colleges of Nursing (AACN) estimates that 80 percent of BN nursing students persist until graduation compared to 74 percent of ADN students (AACN, 2019). Many students tend to stopout or dropout of their programs in

the first semester (Pence & Suerth, 2020). Jeffreys (2004) identified these factors in impacting nursing student retention:

- Academic-Related Issues
- Grade Point Average (GPA) in nursing pre-requisite courses
- Course grades
- Class schedule
- Study skills and study hours
- Student Profile Characteristics
- Age
- Ethnicity and race Enrolment status
- Prior educational and work experience.
- Environmental Factors
- Employment hours
- Family crisis
- Family responsibilities
- Family financial and emotional support
- Childcare arrangements
- Transportation

NCLEX Pass Rates. An additional challenge to increasing the nursing pipeline is the inability of many nursing students to pass the NCLEX examination, a requirement to entering the nursing profession. To put this in perspective, 78.8 percent of the 88,000 ADN students who took the NCLEX for the first time in 2021 passed the exam. Still, this rate is 7 percent lower than BA students (86.1 percent) (American Association of Colleges of Nursing (AACN), 2022). For those who take the NCLEX a second time, less than half (43 percent) end up passing (Meehan & Barker, 2021a, p. 254). As well, there exist large gaps in successful NCLEX completion by race/ethnic groups. Seven percent of White students fail the NCLEX compared to 28 percent of African American students (Grace, 2017).

Factors Related to Nursing Student Success

There are many factors that can be attributed to the success and failure of pre-nursing and nursing students. These can largely be divided into four groups: academic factors, background factors, non-academic (sometimes called non-cognitive) factors, and institutional factors.

Academic Factors. Academic Factors consist of those indicators, values, and variables that focus on either prior or current academic learning. These include prior educational progress and outcomes, including high school grade point averages, type of high school diploma, entrance examination scores, and course and program outcomes.

- **Prior Academic Achievement.** The most reliable predictors of academic success in nursing were high school and college experiences as well as ACT scores (Boyle, 1986). Students who had lower GPAs in high school as well as pre-requisite nursing course work were more likely to fail. Scoring well in English, Science, reading proficiency, writing skills, and math ability were also noted to positively impact and predict nursing success (Brown et al., 2021; Kramlich et al., 2020; Schrum, 2014). Students who earned their ADN programs were more likely to have earned pre-program college credits than non-completers (Muecke, 2008) and less likely to have taken remedial course work during their program (Smith et al., 2016). Similarly, students who already held a prior degree were more likely to complete their nursing studies compared to students without an earned degree (Wray et al., 2012).
- **High School and College GPAs.** High school GPA stands out as the most impactful predictor of nursing student success. When partnered with other variables, such as entrance examination, it can produce a highly predictive indicator for success (Elder et al., 2015; Grace, 2017; Rolf et al., 2019a; Schrum, 2014). Specifically, HSGPA is associated with nursing program success as well as NCLEX pass rates (Flowers et al., 2022; Grace, 2017). College GPAs were also correlated with nursing student success (Schrum, 2014).
- **Critical Thinking Skills.** Critical thinking skills are an important component of contemporary nursing due in part to the quick decisions that nurses must make for the safety and health of a patient (Harrison, 2018; R. R.

Robert & Petersen, 2013). However, Del Bueno (2005) found that only one third of new RN graduates met the expectations for clinical judgement. Successful completion of the NCLEX exam is also tied to critical thinking skills (Giddens & Gloeckner, 2005; Hall, 1996; Henriques, 2002). Giddens and Gloeckner found that, while there was no correlation between a pre- and post-nursing program critical thinking inventory and the NCLEX pass rates, there was a high correlation between critical thinking inventory items and NCLEX pass rates, suggesting that the development of critical thinking skills during the nursing program is essential.

Background Variables. Background factors include those that are indigenous to the person itself, and include gender, race/ethnicity, first language acquisition/English as a Second Language (ESL), age/maturity, first generation status, and at-risk status. The background of students, with regard to such variables as race/ethnicity, age, gender, and socio-economic factors, can be strongly related to the ability of students to complete an ADN or other nursing programs, even though the research can be equivocal.

- **Gender.** Eighty-five percent of nurses in the United States are women (U.S. Census Bureau, 2019). Research exists that suggests that male nurses may encounter many of the same issues that minority and other historically-underrepresented students do in the nursing profession do, including isolation, discrimination, disenfranchisement, and stereotyping (Anderson, 2014).
- **At Risk.** The "at risk" label typically refers single parents, first-generation status, older/mature, low-income, GED, and students with prior learning/academic concerns (Lewis et al., 2018; Merritt, 2021). The research literature is singular in the need to identify at risk students early and implement strategies to ameliorate these issues rather than later when students find themselves in academic duress (Custer, 2016; Jeffreys, 2007; Merritt, 2021). In particular, students with academic deficiencies are at risk of failing nursing courses and the NCLEX examination (Chen & Bennett, 2016; Lewis et al., 2018). Lewis states that this makes the early detection of at-risk students critical for nursing programs.
- **Race/Ethnicity.** As with other variables, the research on race/ethnicity as it relates to nursing student success results in mixed findings, although White students tend to progress to and through nursing programs at much higher rates than underrepresented minority students (URMs). URMs are often subjected to differentiated practices by faculty compared to other students and a difference in interactions with their non-URM peers, both of which negatively impacted the success of these students (Graham et al., 2016). Studies identified "covert racism and racial profiling" and the absence of minority faculty as barriers to success (p. 136). Greenberg (2013) noted that stress and anxiety of students of color manifested itself in terms of isolation and loneliness, which are known to be associated with lower program completion rates.
- **English as a Second Language (ESL).** ESL Students have significantly more challenges in nursing school and tend to dropout at a higher rates when compared with English speakers (Olson, 2012). This issue impacts both program retention and performance on NCLEX testing, where ESL students who are less proficient in the English language are also less likely to pass the test than others (Hansen & Beaver, 2012; O'Neill et al., 2006; Sayles et al., 2003). The complex terminology in the health professions is challenging for ESL students who often need more time to comprehend reading assignments and textbooks (Everett, 2022; Fettig & Friesen, 2014; Greenberg, 2013; Greenfield, 2011).
- **Age/Mature Students.** Sixty-one percent of ADN students are over the age of 25 and a third over the age of 30 (National League of Nursing, 2020). The research literature suggests that being older as a nursing student can be a blessing and a curse. Mature nursing

students are more intrinsically motivated to complete than younger students (El-Banna et al., 2017) and have better coping strategies, support networks, organizational skills, and are more able and likely to get assistance when they need it compared to younger students (L. J. Hayden et al., 2016). However, mature students also tend to work in isolation than other students, a factor related to attrition (Pence & Suerth, 2020). Mature students also have employment and family responsibilities and have been out of the academic realm for several years (Schrum, 2014, p. 14).

- **First-Generation Students.** First-generation college (FGC) students are those whose parents/guardians did not go or complete college. FGC students generally do not persist or achieve as well as other students with educational legacy. Issues facing FGC students include challenges navigating the higher education structure and lesser academic preparation, resulting in higher dropout rates (Pusey-Reid et al., 2021). The transition to college life may also be a challenge (Latham et al., 2016).

Non-Academic Factors. Non-academic factors include variables such as motivation, self-efficacy, psychological, financial, and familial issues. A study conducted by ACT found that non-academic factors, including "academic-related skills, academic self-confidence, academic goals, institutional commitment, social support, certain contextual influences (institutional selectivity and financial support), and social involvement all had a positive relationship to retention" (Lotkowski et al., 2004, p. 7). In addition, their work also found that academic self-confidence and achievement motivation had the strongest relationship to college GPA.

Other factors include finance, life events, family commitments and responsibilities, work schedules, critical thinking, psychosocial issues, goal commitment, faculty support, including perceived faculty support, self-efficacy and self-esteem, stress, and time management (Megginson, 2007; Merritt, 2021b; Osakwe et al., 2022; Smith-Wacholz et al., 2019). Also important are issues that impact nursing students directly, including caring and compassion, integrity, interpersonal skills, altruism and respect, and emotional intelligence (Ehrenfeld & Tabak, 2000; Harris et al., 2014; L. J. Hayden et al., 2016; McBurney & Carty, 2009; Perkins et al., 2013).

- **Time/Family.** Many studies identified family time and responsibilities as a major inhibitor of potential program success related directly to non-completion of BSN programs for RNs (McEnroe-Petitte, 2011). These pressures can cause undue stress for students which can negatively impact their academic achievements (Porter, 2008).
- **Self-Efficacy and Grit.** Bandura's (1997) theory of self-efficacy is often cited as a measure of how a student can have, within themselves, the ability to persevere and progress in higher education. Students with "strong, resilient, and realistically-appraised self-confidence" are more likely to be self-motivated and determined to succeed (Jeffreys, 2015a, p. 428). Studies have found positive relationships between self-efficacy and nursing fundamental grades (Olsen, 2017, p. 90).
- **Motivation, Expectations, and Rigor.** Personal motivation to succeed has been shown to have a significant impact on the ability of students to progress in nursing programs. Higgins (2005) found that ADN graduates believed that motivation was related to decreasing program attrition, while Pence (2010) found that motivation was positively related to first-semester retention.
- **Psychological.** Students in higher education require more mental health services than at any other time. According to the Center for Collegiate Mental Health (2017), the use of counseling centers at colleges has increased between 30 and 40 percent between 2010 and 2015. While providing these services is important, Pusey-Reid et al. (2021) say that simply providing the service is insufficient and that institutions need to help students "build growth mindsets, resilience, grit, and a tolerance for failure" (p. 601).

- **Finance.** Research illustrates that student finances can have a significant impact on nursing program success as well as NCLEX pass rates (Carr, 2011; Everett, 2022; Manieri et al., 2015a; Osakwe et al., 2022; N. Robert, 2018). Shelton (2012a) found that failing students in ADN programs had significant financial issues compared to other students. Sall (2009) and Rogers (2010) found that students who received more financial support from family members tended to have better academic outcomes.
- **Transportation.** The issue of transportation at colleges can be an especially challenging barrier for students. Students who use public transit may require multiple transfers and stops to get to campus. In an EPI analysis, we found that one particular route required a student to travel for 90 minutes on public transport in comparison to a drive of 17 minutes. Even students who own a car can be undone if something goes wrong. In fact, some students are one breakdown or one loan payment away from not being able to use their vehicle.

Institutional Factors. The factors previously discussed describe issues predominantly outside the purview or control of the institution. They are, in effect, brought to the institution by students and the outer community. However, they result in an opportunity or necessity of the institution to engage and provide solutions that may ameliorate negative situations. This is where institutions must creatively provide a supportive learning environment that in turn allows students the best opportunity for academic success. Some of these factors including the following:

- **Advising/Mentoring/Coaches.** Research shows that support services, through advising, mentoring, and coaching, can improve fortunes for nursing students. Advisors and mentors can help two-year ADN students by helping them assimilate into the program (Ramsburg, 2007; Tinto, 1993). Some nursing programs require faculty mentoring for all nursing students (Petges, 2019), and studies find that faculty play an important role through the intentional provision of support to help students build resilience to setbacks that often come in rigorous programing (Pusey-Reid et al., 2021).
- **Instructional Faculty.** Faculty play a critical role in the success of nursing students. The research literature often discusses nursing faculty in a negative manner, describing them as unapproachable or intimidating (Owen, 2020, p. 233). In fact, negative faculty bias has been found to be a primary reason for student failure. Higher-quality faculty/student interactions help build trust and foster students' sense of belonging inside and outside of the classroom (Osakwe et al., 2022). Benner et al. (2009) suggest that programs and institutions should focus on:
    - enhancing the practice of teaching in the profession;
    - improving faculty development incentives and rewards for good teaching; and
    - developing curricula and strategies that foster lifelong learning and clinical inquiry skills in student nurses.
- **Curriculum/Instruction.** Related to faculty is the curriculum and pedagogy utilized in teaching and learning. Several studies find that many students, including those from diverse backgrounds, have problems with traditional teaching methods employed in nursing classrooms (B. L. Fuller & Mott-Smith, 2017; Greenberg, 2013; Harris et al., 2014; James, 2018; Mulready-Shick, 2013; Onovo, 2019). Kramer (1974) suggests that there exists a large disparity between the nursing curricula and pedagogy with the actual experiences in the field. Moving from a teaching-centered approach to one where the learner is the primary focus can bring result in positive changes in learning. Gatekeeper courses in the nursing program, especially the 17-credit pre-health component at some colleges, is designed, either by intent or by accident, to weed out students from entering the nursing program. Some thought should be made

towards which pieces are essential and how the essentials are taught for success.

- **Remediation.** Remediation programs provide additional academic support to help students master academic content and processes. This can be provided through a variety of strategies, including tutoring, after-class programming, summer bridge programs, and instructor-based workshops and one-on-one sessions. Remediation can also be embedded within the curricula. Effective remediation provides corrective feedback and procedures that help students address their learning difficulties (Guskey, 2010).
- **Recruitment and Admissions.** The recruitment and admissions processes are critical to attracting students to the nursing profession. Historically, traditional methods of admissions have focused on academic achievement indicators, including SAT/ACT scores, high school GPA, and pass rates or scores on pre-requisite course work (Manieri et al., 2015). And although there has been a push for more holistic admissions criterion, standardized test scores are still a primary measure for nursing school admissions (Bennett et al., 2016; Cunningham et al., 2014). Even with this reinforcement of higher standards, studies show that qualified applicants continue to be turned away from prelicensure programs. Thirty-eight percent of qualified applicants were turned away from ADN programs and 29 percent from BSN programs (National League for Nursing, 2018).
- **Clinical and Simulations.** Clinical experiences are a critical part of the nursing preparatory process. Sixty percent of US states have regulations about clinical education requirements and only 10 states have requirements about the number of clinical hours for prelicensure nursing education, which range from about 400 to 750 hours. Nursing programs we reviewed required staff to find up to 180 clinical spots each semester. The rotations allow students to build a skill base for nursing as well as build a repertoire of practice based on the academic work in the nursing program. The clinical rotations also provide an opportunity for students to try out nursing and decide whether they like it or not. Some of the challenges with clinicals is related to student tardiness and absenteeism as well as the problem with some clinical sites not providing enough experience for the students.

  Simulations, or SIMs, have grown in their complexity and usage at nursing schools in recent years. The technology affords an opportunity for "near real" experiences that can be duplicated and analyzed without having to worry about real patients in clinical environments. While simulations cannot replace all clinical experiences, they can provide an excellent opportunity to support the clinical experience.
- **Institutional Culture.** Environmental factors can be defined as those that are "external to the academic process that may influence students' academic performance and retention and include financial status, family financial support, family emotional support, family responsibilities, childcare arrangements, family crisis, employment hours, employment responsibilities, encouragement by outside friends, living arrangements, and transportation" (Jeffreys, 2012, p. 112). Many researchers have substantiated that environmental factors can influence the achievement, persistence, and retention of nursing students (Bean & Metzner, 1985; Jeffreys, 2007, 2012). Jeffreys (2012) states that environmental factors are as important as academic factors in determining the success of nontraditional nursing students.

High-Stakes Tests

High-stakes tests serve a purpose in helping identify students who can succeed in nursing programs as well as identifying risks and areas for focus in terms of interventions (Schmidt & MacWilliams, 2011). While standardized tests have been used in admissions for over 70 years, there has been a movement to provide more holistic approaches to program admissions (Bennett et al., 2016; Capponi & Mason Barber,

2020; Cunningham et al., 2014). However, this has not diminished the use of standardized tests for admissions decisions.

Research finds that entrance examinations, in tandem with student academic records, serve as effective screening tools for nursing programs (Manieri et al., 2015). The use of entrance tests can help predict whether students will be successful in nursing courses, the NCLEX exam, and ultimately, become an effective nurse (Meehan & Barker, 2021a). Studies have shown that high GPA scores and higher-than-average pre-nursing program exam scores can predict ADN success (Cornelius, 2012; Hernandez, 2011; Schmidt & MacWilliams, 2011). Other studies have shown that science components on a standardized test serves as a predictor of early nursing program success (Liu et al., 2018).

There is concern about the fairness of standardized tests in nursing admissions and program progression. For instance, ESL students tend to score lower on standardized tests than English speakers. As well, the use of multiple-choice questions can be difficult for foreign students (Everett, 2022; Fettig & Friesen, 2014; B. L. Fuller & Mott-Smith, 2017; Greenberg, 2013; Onovo, 2019). Students with test anxiety have been found to achieve lower test scores, even when prior academic achievement is controlled (Pintrich et al., 1991).

The TEAS Examination. The Test of Essential Academic Skills (TEAS) is used at hundreds of nursing schools and colleges across the United States and Canada for entrance into their ADN and RN programs. ATI, the developer of the TEAS, says the test is an excellent predictor of first semester nursing program success (ATI, 2010). However, research on the efficacy and reliability of the test is equivocal (Wolkowitz & Kelley, 2010). Studies have found that the TEAS is better at predicting successful students than it was in predicting unsuccessful students (McGrath & Mister, 2021; Rolf et al., 2019a). That stated, ATI found that the TEAS is highly correlated with program attrition in nursing programs (Grace, 2017).

At our study college, a minimum level of 60 (out of 100) on the reading and comprehensive skill sections of the TEAS was required. One staff member commented that this very low threshold is a problem for an open-admission institution. Students were able to take the TEAS up to three times in a calendar year. If they did not pass the TEAS test, they were to wait a month before taking it a second or third time. Instructors suggested that if students did not pass it on their second attempt, they are unlikely to do so on their third. This belief aligns with national data.

Faculty and staff noted two important factors that can help students improve their TEAS performance:

- **Communication.** There seems to be some level of disconnect between pre-nursing programming and the nursing program itself, with regard to coordination and support. One college used the Navigate system to share information. Faculty were able to refer students for tutoring or other services. The question ultimately becomes about whether faculty use the Navigate software effectively, or at all.
- **TEAS Test Prep.** TEAS test prep workshops were held to help students prepare for the TEAS. This was typically over an 8–10-week program. Data from the program shows that the prep was helpful in getting students to pass the TEAS (>60) so they can enter the PN program.

The National Council Licensure Examination (NCLEX). The NCLEX examinations are developed by the National Council of State Boards of Nursing (NCSBN). Given the high stakes of the NCLEX exams, nursing programs look to ensure that their student graduates will pass the exam, and passing the NCLEX on the first attempt has become an indicator of nursing program quality. In 2022, the first-time pass rate on the NCLEX-RN and NCLEX-PN was 79.9 percent for US-educated students (NCSBN, 2023). The repeat pass rates were 43.7 percent for NCLEX-RN and 35.7 percent for PN (NCSBN, 2022).

NCLEX success has been predicted by many factors, including pre-admission GPA, entrance exam scores, interview scores, nursing program GPA, remediation, and academic performance in Psychiatric/mental health, pharmacology, and fundamentals (Koestler, 2015; Landry et al., 2010; Moore et al., 2021b; Rolf et al., 2019). Studies have found that non-academic factors can also predict NCLEX, including ESL (related to stress) (Flowers et al., 2022).

When asked why students don't pass the NCLEX, faculty at our study college offered these reasons:

- **Dedication.** Not all students are dedicated to their studies and to preparing for the NCLEX.
- **Culture.** Foreign students have a difficulty with the language and cultural challenges of college in America.
- **Unpreparedness.** Too many students are underprepared for the rigor or nursing.
- **Test Anxiety.** Many students are anxious about the TEAS and NCLEX, resulting in poorer performance.
- **Test Prep.** Insufficient or nonexistent NCLEX test prep.

Introduction

This research review was conducted for a nursing school in the Midwest of the United States. Two components of this study are included in this report. The first is an extensive review of the research literature, which reviewed 228 articles, papers, and reports. The second was a series of interviews with nursing faculty and stakeholders at the institution. The interviews were conducted in fall 2021.

Nurses comprise the largest segment of the healthcare profession in the United States. In total, approximately 4.2 million registered nurses (RNs) are employed nationwide in addition to almost one million licensed practical nurses (LPN)s and licensed vocational nurses (LVNs) (Smiley et al., 2021). However, a combination of an aging/retiring workforce, nursing retention, and a lack of nursing program openings has resulted in a consistent and perpetuating gap in the needs of society and the availability of new nurses to meet these needs.

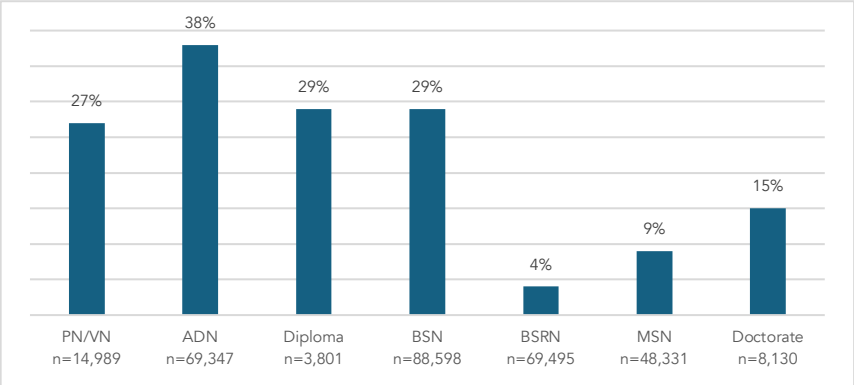
The deficit of nurses in the US has been predicted and quantified for decades. The nation currently wrestles with a nursing shortage that will likely only worsen over the next several decades (Bumby, 2020; Nnedu & Davis, 2019). In 2014, the American Association of Colleges of Nursing (AACN) warned that there would be a deficit of one million nurses by 2022 (Grace, 2017; Olsen, 2017). This is not solely an American issue. It is estimated that there is a 4.3 million worldwide shortage of healthcare professions around the world, including doctors and nurses (Mthimunye & Daniels, 2019, p. 201). Complicating the matter is the aging nursing sector with average age of 43.3 years for RNs with less than 10 percent under the age of 30 (AACN, 2019).

Still, with an expected growth of new nursing jobs by 6 percent between 2022 and 2032, representing an additional 197,000 positions, persistent challenges in education and retention strategies compromises the ability of the nation, as a whole, to meet these deficits (AACN, 2024; Marvos & Hale, 2015). Although the number of students taking and passing the NCLEX exam has increased over the years, the National Council of State Boards of Nursing (NCSBN) reports that current trends will not meet the national health care needs (Pusey-Reid et al., 2021).

Complicating this issue is the knowledge that 50 percent of students in nursing programs in the United States leave their program before completion, many of whom leave during the first semester (Everett, 2022). Higher attrition rates are evident among "nontraditional students, including older students, minority students, and students from other underrepresented populations" (Everett, 2022, p. 1). Worse yet is that an estimated 75,000 qualified applicants were not able to gain admissions to a nursing program in 2018 due to "lack of nursing faculty, clinical facilities, and lack of adequate education budgets" (Capponi & Mason Barber, 2020, p. 1). The COVID-19 pandemic served only to highlight the nursing deficit (Everett, 2021).

The National League for Nursing reports that, although the nursing profession is growing, many qualified applicants are being turned away from pre-licensure nursing program (National League of Nursing, 2018). They report that 38 percent of qualified applicants were turned away from Associate Degree Nursing (ADN) programs compared to 29 percent from Bachelor of Science in Nursing (BSN) programs (Eudy & Brooks, 2021).

Exhibit 1. *Percentage of Qualified Applications Turned Away by Program Type, 2018 (National League of Nursing, 2018)*



Capponi & Mason Barber (2020) state that nursing shortages also influence nursing faculty. They argue that the shortage of nurses contributes to a lower number of nursing faculty, contributing to fewer seats in nursing programs, resulting in fewer nursing students. The cycle repeats and creates even greater issues for the nursing profession. According to the AACN (2019), there was a 7.9 percent nursing faculty vacancy rate in colleges across the country in 2018.

Diversity in Nursing

According to report from the Sullivan Commission, the nation's health professions have not kept pace with changing demographics may be an even greater cause of disparities in health access and outcomes than the persistent lack of health insurance. Today's nurses have too little resemblance to the diverse populations they serve, leaving many Americans feeling excluded by a system that seems distant and uncaring. (Nnedu & Davis, 2019, p. 2)

In 2004, the Kellogg Foundation funded what became known as the Sullivan Commission to study issues related to the future nursing profession. They surmised, "If the trends continue, the health workforce of the future will resemble the population even less than it does today" (Sutherland et al., 2007, p. 347). Others have made similar prophesies: "Increasing diversity in the nursing workforce has been cited as key to decreasing long-standing health disparities in the United States" (Osakwe et al., 2022). The AACN has stated that a diverse workforce is connected with optimal patient outcomes (Eudy & Brooks, 2021). This is in part due to the fact that minority health care workers are more likely to work in underserved areas that are majority minority (Latham et al., 2016).

Data from the 2018 National Sample Survey of Registered Nurses (RNs) found that non-White RNs represented only a quarter of the profession, with 10.2 percent of Hispanic background and 7.8 percent Black. "In the United States of America (USA), it is known that there are major differences in access and care outcomes for ethnic and racial minorities, and there is evidence to suggest that a diverse healthcare workforce will improve health disparities of ethnic and other socially disadvantaged groups" (Doggrell & Schaffer, 2016). "Understanding what variables might influence program completion is an important academic and healthcare issue because the nursing shortage is expected to increase throughout the next decade" (Smith et al., 2016).

The way to address the ethnic and racial diversity challenges in nursing requires the profession to

"innovate strategies to recruit, retain, and graduate nurses from diverse ethnic and racial populations" (Denham et al., 2018, p. 172). Strategies that focus on communications, learning needs, cultural differences, and social-emotional support are important to increase the success of nursing students from diverse backgrounds (Everett, 2022; Hansen & Beaver, 2012; Jeffreys, 2012; Onovo, 2019).

Part of the lack of qualified nurses stems from lack of educational opportunities. The American Association of Colleges of Nursing reported that 75,000 or more program applicants were rejected in 2018 due to "lack of nursing faculty, clinical facilities, and lack of adequate education budgets" ((Nnedu & Davis, 2019). The primary reason for the low numbers of qualified nurses is the aging out of current nurses, inability to attract new students, and a decrease in retention of nursing students (Everett, 2022; Grace, 2017).

In addition, the profession has not kept up with changing demographics resulting in nurses around the country not reflecting the diversity of the local or regional areas. Additionally, many nursing educators are either part-time status or lack formal preparation in curriculum and teaching (Jeffreys, 2015). Jeffreys also noted that issues on the nurse education side greatly impacts the education of a diverse nursing population:

Unfortunately, the nurse educator shortage, high numbers of part-time faculty, full-time faculty lacking formal preparation in curriculum and teaching, and educators unequipped to meet nursing students' diverse educational and holistic needs further complicate the problem. Hence, it is not surprising that the most persistent trend in student persistence and retention research is that student attrition persists, therefore demanding prioritized attention and action. (Jeffreys, 2015b, p. 425)

A critical strategy to supporting students of color includes early identification via a self-assessment to allow students to recognize or reveal their particular needs (McLain et al., 2017). Jeffreys (2012) says that the nursing profession must acknowledge a new reality due to demographic changes, a restructured labor force, and incoming students who are unprepared for the rigors of nursing education.

Retention/Graduation

A challenge in nursing is finding reliable, consistent data regarding the persistence and graduation of nursing students at the ADN and BN levels. Data from membership organizations tend to lean towards better outcomes while those from non-partisan groups are difficult to find. For instance, the National League for Nursing (NLN) stopped reporting RN graduation rates in 2008 and their recent data focused on enrollment rather than graduation. Even in this review, we found statistics regarding nursing graduation rates published in various peer-reviewed journal articles and reports were misleading if not factually incorrect.

The AACN Studies have documented that nursing programs graduated between 80 to 87 percent of students (Smith-Wacholz et al., 2019) compared to 42 percent for ADN students (Rodgers et al., 2013). The Association of Colleges of Nursing (AACN) estimates that 80 percent of BN nursing students persist until graduation compared to 74 percent of ADN students (AACN, 2019). However, we caution that these data are unverifiable.

According to AACN, American nursing schools turned away 91,938 qualified applications from baccalaureate and graduate nursing programs in 2021 (AACN, 2022). The report claims this is due to an "insufficient number of faculty, clinical sites, classroom space, and clinical preceptors, as well as budget constraints" (p. 2).

Experts find that the first course or semester is the most critical time for nursing student attrition (Pence & Suerth, 2020). Students may have difficulty in fundamental issues in nursing, attributing the early attrition rates. (Jeffreys, 2004)

identified these factors in impacting nursing student retention:

- Academic-Related Issues
- Grade Point Average (GPA) in nursing pre-requisite courses
- Course grades
- Class schedule
- Study skills and study hours
- Student Profile Characteristics
- Age
- Ethnicity and race Enrolment status
- Prior educational and work experience.
- Environmental Factors
- Employment hours
- Family crisis
- Family responsibilities
- Family financial and emotional support
- Childcare arrangements
- Transportation

Other factors identified which impact student persistence and graduation include poor academic history, self-efficacy, repeating courses, stopouts, and ESL (Merritt, 2021a).

NCLEX Pass Rates

The pass rate of students on their first attempt at NCLEX-RN has emerged as an important indicator of the quality of a nursing program. Additionally, students that fail their first attempt on NCLEX-RN have only a 43.22% chance of passing NCLEX-RN on the second attempt according to national statistics in the United States (National Council of State Boards of Nursing 2018). These statistics and a sincere concern for the at-risk student population led faculty to incorporate a remediation program to assist students in their successful completion of the NCLEX-RN. (Meehan & Barker, 2021a, p. 254)

In 2021, over 88,000 ADN students took the NCLEX for the first time, resulting in a 78.8 percent pass rate, 7 percent lower than BA students (86.1 percent) (American Association of Colleges of Nursing (AACN), 2022). As illustrated below, the pass rates declined during the pandemic, from a high of 85 percent in 2019 to 79 percent in 2021. Thus, the national rate for ADN students is currently below the Institute of Medicine's 80 percent expectation of first-time pass rates on the NCLEX (Institute of Medicine (US) Committee on the Robert Wood Johnson Foundation Initiative on the Future of Nursing, at the Institute of Medicine, 2011). The good news is that there were more first-time NCLEX test takers at both the ADN and BA levels than in the prior decade.

There exist large gaps in successful NCLEX completion by race/ethnic groups. Grace (2017) found that White Americans had an NCLEX failure rate of 6.8 percent compared to 28.3 percent of African American students.

Some members of the staff we spoke with felt that there is a hyperfocus on retention at the college rather than successful completion of the NCLEX. Faculty and staff are keenly aware of both the program completion rates as well as the NCLEX first-time pass rates. There was a sentiment that the only metric that matters is the NCLEX rate.

Well, the State Board of Nursing doesn't care how many students we start out with or how many students we graduate. What they want to know is how many of our students were successful on NCLEX the first time. We have to meet an 80 percent benchmark. They don't care that we started with 100 and we graduated 80. They could care less. They want to know of those 80 students that we graduated, how many of them were able to pass NCLEX on the first attempt. That's it.

Exhibit 2. *NCLEX Annual Pass Rates for First-Time Test-Takers (American Association of Colleges of Nursing (AACN), 2022)*

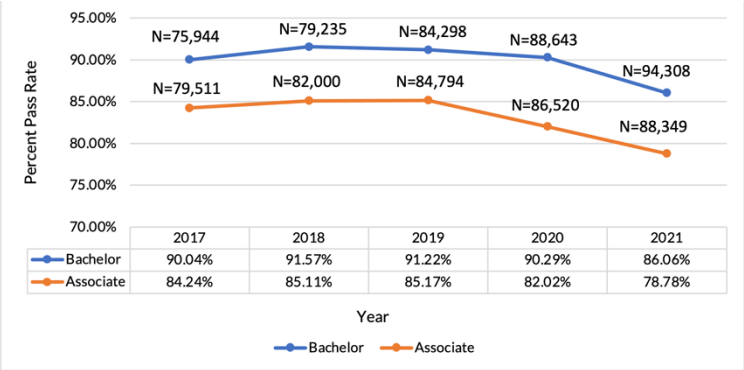
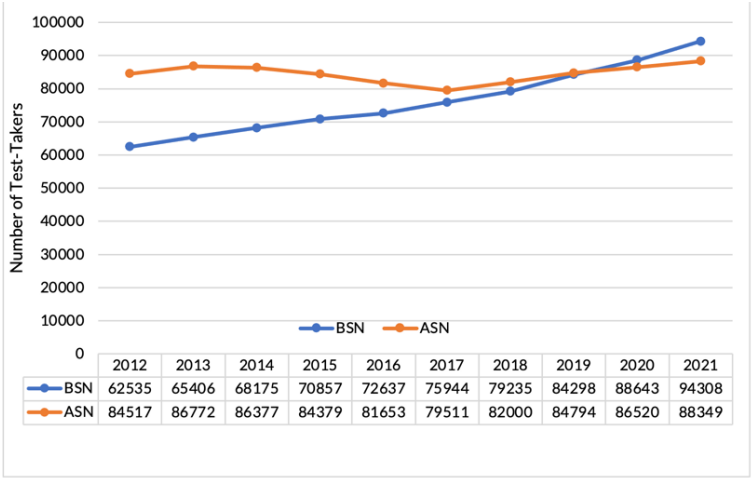


Exhibit 3. *Number of First-Time Test-Takers by Degree Type (American Association of Colleges of Nursing (AACN), 2022)*



Factors Related to Nursing Student Success

There are many factors that can be attributed to the success and failure of pre-nursing and Practical Nursing students. These can largely be divided into three groups: academic factors, background factors, and non-academic (sometimes called non-cognitive) factors.

Academic Factors consist of those indicators, values, and variables that focus on either prior or current academic learning. These include prior educational progress and outcomes, including high school grade point averages, type of high school diploma, entrance examination scores, and course and program outcomes. Background factors include those that are indigenous to the person itself, and include gender, race/ethnicity, first language acquisition/English as a Second Language (ESL), age/maturity, first generation status, and at-risk status. Non-academic factors include variables such as motivation, self-efficacy, psychological, financial, and familial issues. Together, the strength and weaknesses of these characteristics have an impact on the ability of a student to persevere and success in nursing programs.

There exists a litany of items in the research literature that have been shown to impact student success for nursing students. A non-exhaustive list includes high school GPA, entrance exam scores, interview ratings, prior postsecondary credentials, low number of failed courses or withdrawals, course rigor in high school, class rank, socio-economic status, race/ethnic group, study skills, time management, motivation, continuous enrollment, enrollment status (e.g., full-time versus part-time), commitment to learning, maturity, age, financial wherewithal, having dependents/children, familiar pressures, employment, class schedules, transportation, and many other factors that can ultimately impact an individual's success in postsecondary education.

The following describes some of these items and what the research has to say about the importance of them in terms of student success in nursing programs.

Academic Factors

Prior Academic Achievement

According to Boyle (1986), the most reliable predictors of academic success in nursing were high school and college experiences as well as ACT scores. Boyle specifically noted that students who had lower GPAs in high school as well as pre-requisite nursing course work were more likely to fail. Scoring well in English, Science, reading proficiency, writing skills, and math ability were also noted to impact nursing success (Brown et al., 2021; Kramlich et al., 2020; Schrum, 2014). Sall (2009) found a direct link between students who completed college preparatory courses were more successful in ADN programs.

Prior outcomes in postsecondary education were also connected with nursing program success. Olsen (2017) identified connections between pathophysiology, microbiology, anatomy and physiology, and math courses with future nursing program success. Students who earned their ADN degrees were more likely to have earned pre-program college credits than non-completers (Muecke, 2008) and less likely to have taken remedial course work during their program (Smith et al., 2016).

Students who already held a prior degree were more likely to complete their nursing studies compared to students without an earned degree (Wray et al., 2012). Students with a previous baccalaureate degree were 59.7 percent more likely to graduate than other students (Cipher et al., 2017). As well, students who persisted through their nursing program were more likely to have a prior degree compared to those who dropped out of the program (Shelton, 2012b). Cipher also found that failed courses reduced the likeliness to graduate by 24.4 percent.

High School and College GPAs

As an isolated variable, high school GPA (HSGPA) stands out as the most impactful predictor of nursing student success. When partnered with other variables, such as entrance examination, it can produce a highly predictive indicator for success. There are many studies that illustrate that higher HSGPAs are associated with nursing success (Elder et al., 2015; Grace, 2017; Rolf et al., 2019; Schrum, 2014). Specifically, HSGPA is associated with nursing program success as well as NCLEX pass rates (Flowers et al., 2022; Grace, 2017).

College GPAs were also correlated with nursing student success. Schrum (2014) specifically noted that lower GPAs correlated with failing specific nursing courses compared to students with higher GPAs. "Students with higher GPAs had strengths in task value, control of learning, and effort regulation. GPA had a positive correlation with task value suggesting that students who had a higher GPA were more likely to value a course than students who had a lower GPA" (Pence & Suerth, 2020b, p. 162).

However, Jeffreys (2012) noted that focusing on GPA in isolation is "unacceptable" for determining progression through nursing programs, but that the outcomes of pre-requisite

courses were one of the more significant factors to consider.

One other caveat is that grade inflation can impact the utility of GPA as a predictor. Scanlan & Care (2004) noted that grade inflation illustrates a situation where the grade points increase but the performance or abilities of the student do not, causing a complexity for admissions in determining which students are appropriately prepared and/or suited for nursing programs. Thus, other indicators that illustrate basic skills development need to be paired with GPA and other variables (Pusey-Reid et al., 2021).

Critical Thinking Skills

Critical thinking skills are an important component of contemporary nursing. Nurses are required to make quick decisions that impact the safety and health of a patient (Harrison, 2018; R. R. Robert & Petersen, 2013). As Romeo (2010) states, "Critical thinking in nursing is an essential component of professional accountability and quality nursing care" (Romeo, 2010). Romeo outlines "confidence, contextual perspective, creativity, flexibility, inquisitiveness, intellectual integrity, intuition, open-mindedness, perseverance, and reflection" as key areas related to critical thinking in nursing and the "cognitive skills of analyzing, applying standards, discriminating, information seeking logical reasoning, predicting and transforming knowledge" (Romeo, 2010, p. 357).

However, not all nursing students or nurses possess these skills. A study by Del Bueno (2005) found that only one third (35 percent) of new RN graduates met the expectations for clinical judgement. The author found that incorporating Performance Based Development System (PBDS) video simulations was able to bring up that percent to approximately two-thirds. A probable cause of this differentiation is the push to provide more content with less application. A study by Wangensteen et al. (2010) also identified traditional teaching methods as a possible cause of novice nurses' low critical thinking scores. The development and use of pedagogy to incorporate critical thinking skills and learning into the curriculum must become a prime responsibility of nursing education leadership (Romeo, 2013).

Successful completion of the NCLEX exam is also tied to critical thinking skills (Giddens & Gloeckner, 2005; Hall, 1996; Henriques, 2002). Giddens and Gloeckner conducted a study of 218 nursing students and conducted a correlation of scores on a pre- and post-nursing program critical thinking inventory and the NCLEX pass rates. The researchers found no correlation between the pre-test rates and the NCLEX pass rates. However, there was a high correlation between critical thinking inventory items and NCLEX pass rates, meaning that the development of critical thinking skills during the nursing program is essential. This is one reason that many nursing schools incorporate an end-of-program assessment in order to gauge the readiness of students for the NCLEX examination (Harrison, 2018). In contrast, there are several studies that found no linkage between critical thinking skills and NCLEX pass rates (Shirrell, 2008; Stewart & Dempsey, 2005). Still, the importance of critical thinking is not lost on nursing students. A study of 7,500 nurses found that they blamed poor critical thinking skills as leading cause for practical deficiencies (Harrison, 2018).

Background Variables

The background of students, with regard to such variables as race/ethnicity, age, gender, and socio-economic factors, can be strongly related to the ability of students to complete an ADN or other nursing programs, even though the research can be equivocal. (Schrum, 2014) identified studies that found that age and ethnicity were among the most influential demographic predictors of academic success and retention. Jeffreys (2012) also found that age, gender, and enrollment status were associated with program completion, as was race/ethnicity, where students who were non-White were less likely to complete nursing programs than White students. A study by UNC Chapel Hill in 2008 of 2,237 ADN students found traditional age students, those who were

over 40 years of age, those of color, those with a GED, and those from low-income backgrounds (e.g., Pell eligible) were less likely to graduate on time or at all (Fraher et al., 2008). Conversely, (Eudy & Brooks, 2021) found that age, gender, change of major, and concurrent enrollment in Anatomy & Physiology were not associated with success in nursing fundamentals.

Gender

The nursing profession is largely occupied by women. According to the U.S. Census Bureau, 85 percent of nurses in the United States are women (U.S. Census Bureau, 2019), although other studies suggest that men make up only 6.8 percent of the nursing force (Anderson, 2014). For men who enter the nursing profession, there is research that shows that they encounter many of the same issues that minority and other historically-underrepresented students do in the nursing profession do, including isolation, discrimination, disenfranchisement, and stereotyping (Anderson, 2014). While men have historically held other, more prominent roles in health professions, women outnumbered men in medical schools in 2019 (Marshall, 2022). In fact, there has been a decline in women choosing occupations that are traditionally viewed upon as "women-based" occupation, including teaching and nursing (Shelton, 2012).

Due in part to the inequities in nursing education by gender, there are few studies on the issue that provide statistically significant findings related to educational outcomes (Olsen, 2017). Many of the empirical studies reviewed for this project were from outside the United States. Olsen identified four studies that examined gender and ADN program success, finding no relationship between the two.

At Risk

There is much discussion of "at risk" students in higher education and particularly in nursing programs. At risk, like many other labels, has varied definitions, including students who are single parents, first-generation status, older/mature (as in this paper, not always a negative), low-income, GED, prior learning/academic concerns, and others. Most times, at risk in the research literature focuses on the academic ability and progress of students in nursing programs. There are critics that suggest that some programs admit too many at risk students (Lewis et al., 2018; Merritt, 2021).

The research literature was singular in the need to identify at risk students early and implement strategies to ameliorate these issues rather than later when students find themselves in academic duress (Custer, 2016; Jeffreys, 2007; Merritt, 2021). Jeffreys created the NURS Model (Nursing Universal Retention and Success) to "present a globally applicable organizing framework for examining the multidimensional factors that affect nursing student retention and success in order to identify at-risk students, develop diagnostic-descriptive strategies to facilitate success, guide innovations in teaching and educational research, and evaluate strategy effectiveness" (Jeffreys, 2015b, p. 426).

Studies have found that students with academic deficiencies are at risk of failing nursing courses and the NCLEX examination (Chen & Bennett, 2016; Lewis et al., 2018). Lewis states that this makes the early detection of at-risk students critical for nursing programs. Those who must repeat courses are even at greater risk of passing the NCLEX exam.

Typically, admission criteria are used to identify academic risk factors in students (Rolf et al., 2019). The use of GPA scores, TEAS, and interview scores can often provide necessary information to identify those who may have academic challenges in strenuous nursing programs. Often, remediation, peer support, and mentoring are inserted to help students.

One particular case study relied on the early identification of at risk students into a program called 'Rx for Success,' which was a "formalized, structured, evidence-based" program to support academic success (Kramlich et al., 2020, p. 196). The "EBQI" project created a series of workshops for identified at risk students. Students were

required to participate in these faculty-designed workshops, which carried into the first semester. Workshops focused on issues including test-taking skills, critical thinking skills, dosage review, self-care, and test prep workshops (Merritt, 2021). Merritt found that students who attended more of the workshops had better attendance during the semester than those who attended less workshops.

Race/Ethnicity

As with other variables, the research on race/ethnicity as it relates to nursing student success results in mixed findings, although clearly White students tend to progress to and through nursing programs at much higher rates than underrepresented minority students (URMs). Graham et al. (2016) conducted a literature review on barriers to nursing success, related specially to clinical practices, and found that underrepresented minority (URMs) students were subjected to differentiated practices by faculty compared to other students and a difference in interactions with their non-URM peers, both of which negatively impacted the success of these students. Their study identified research that found that URM students perceived negative interactions with "clinical faculty, peers, and nurses" (p. 135), although other studies did not find this for Hispanic students. Studies identified "covert racism and racial profiling" and the absence of minority faculty as barriers to success (p. 136).

Greenberg (2013) noted that stress and anxiety of students of color manifested itself in terms of isolation and loneliness, which are known to be associated with lower program completion rates. Studies suggest that the ethnic background of students can alter the perceptions of postsecondary education for students. Latham et al. (2016) noted that White ("European ancestry") students were afforded more academic support during orientations while African American and Hispanic students tended to receive more socialization as opposed to academic support. Everett (2021) found that communication, learning needs, social-emotional support, and cultural differences were related to attrition of URM students.

One logistic regression of TEAS and NCLEX exams and found that White students were 5.5 times more likely to be successful on the NCLEX-PN exam compared to Black students (Grace, 2017).

English as a Second Language (ESL)

Students who have learned English as a Second Language (ESL) have significantly more challenges in nursing school and tend to dropout at a higher rates when compared with English speakers (Olson, 2012). This has also impacted both program retention and performance on NCLEX testing, where ESL students who are less proficient in the English language are less likely to pass the test than other students (Hansen & Beaver, 2012; O'Neill et al., 2006; Sayles et al., 2003). One study found that ESL students with higher English speaking scores had "higher academic success perceptions" due to a gain in self-confidence (Denham et al., 2018, p. 176). On a macro level, the challenges facing ESL nursing students also has an impact on diversity in health care at large (Schrum, 2014).

There are also reports that American, native-English students communicate different with faculty and patients compared to other students (Sailsman, 2021). The use of colloquialisms can be problematic for ESL students. Coddington & Karsten (2014) found that ESL nursing students confused certain terms, some as simple as "Cheerios" and "cocktail." They provide the example of an Asian student who confused "cocktail" between a shrimp cocktail rather than a combination of drugs. "Nursing faculty must pay attention to nuances in the spoken word that may confuse their students who are not native English speakers" (p. 136).

The health care profession is full of complex terminology that can be difficult for native English speakers in nursing programs, let alone those whose second language is English. ESL students often have to translate words into their native language to understand terms. The time needed for ESL students to comprehend reading assignments and textbooks put them at a major

disadvantage, even those who may have a decent command of conversational English but a lesser command of written English (Everett, 2022; Fettig & Friesen, 2014; Greenberg, 2013; Greenfield, 2011).

A study by Sanner & Wilson (2008) found that the stereotyping by faculty of ESL students was an obstacle to performance and persistence (Sailsman, 2021). Several studies point to cultural insensitivity to diversity and inclusion by faculty and that there existed a perception gap between the faculty and students on these issues (Jalili-Grenier & Chase, 1997; Sailsman, 2021). As Fuller (2013) and others stated, nursing students who feel safe and welcome in the learning environment—an environment the is culturally inclusive—enhances learning for all students (B. Fuller, 2013; Onovo, 2019).

Potential supports for ESL students include mentorship programs and faculty interventions. Some worried that remediation took away valuable study time for ESL students (Sanner & Wilson, 2008; Seibold et al., 2007).

Age/Mature Students

While approximately half of all postsecondary students are over the age of 25 (Schrum, 2014), 61 percent of ADN students are over the age of 25 and a third (35 percent) over the age of 30 (National League of Nursing, 2020). Many nursing students today are starting a second career, which helps explain the age skew discussed above (Shelton, 2012b, p. 1).

Compared to a few decades ago, current students accepted into nursing programs are more likely to be older, have additional employment and family responsibilities, have been out of the academic realm for several years, and may be academically less prepared than in the past, a definition of the nontraditional student. (Schrum, 2014, p. 14)

The research literature suggests that being older as a nursing student can be a blessing and a curse. Some studies suggest that older students are more likely to complete their programs while others suggest they are more likely to dropout. Schrum (2014), for instance, found several studies that noted that older students persist longer than their younger peers while other studies found the opposite (Pence & Suerth, 2020). As well, older ADN students who fail and are readmitted to their program are again less likely to complete compared to younger students (Dries, 2020).

Studies have found that older nursing students are more intrinsically motivated to complete than younger students (El-Banna et al., 2017) and that this group of students have better coping strategies, support networks, organizational skills, and are more able and likely to get assistance when they need it (L. J. Hayden et al., 2016). In addition, learning styles and pedagogy are linked to possible better persistence and achievement of adult students (Rassool & Rawaf, 2007). Mature students tend to create better learning environments than other students (Pence & Suerth, 2020). However, mature students also tend to work in isolation than other students, a factor that is related to attrition (Pence & Suerth, 2020).

It should be known that the research on age in nursing education is limited, and often limited by the varied interpretations and definitions of what "mature" is. Hayden et al. (2016), in their review of nursing studies, found that half of the studies failed to adequately define age groups.

First-Generation Students

First-generation college (FGC) students are those whose parents/guardians did not attend or complete college. The US Department of Education, in the Higher Education Act, defines FGC students as having parents who did not complete a baccalaureate degree" (Pusey-Reid et al., 2021a, p. 600), although the definition is typically broader in the higher education community. Many colleges have variables for First-Time in College (FTIC) in their databases,

which is slightly different but often uses as a proxy for FGC.

FGC students generally do not persist or achieve as well as other students who have educational legacy. Pusey-Reid et al. (2021) identified studies suggesting that FGC students have challenges navigating a middle-class higher education structure and are less prepared for postsecondary studies, resulting in higher dropout rates. Latham et al. (2016) found that the transition to college life is more challenging for FGC students than other students due to their inadequate academic preparation as well as the demands of nursing programs. They encourage colleges to develop targeted transition programs for incoming nursing students to help ameliorate some of these issues and acclimate to the college experience.

Exhibit 4 illustrates the relative strength of the correlation between academic and non-academic factors with college retention based on the ACT study. As illustrated, the top four non-academic factors had a correlation value higher than that of HSGPA, largely considered one of the premier predictors of both postsecondary success and nursing program success.

Non-Academic Factors

Much of the dialogue on nursing success focuses on the academic factors related to program studies, including prior academic preparation and outcomes as well as pre-requisite work. However, there is a body of work which illustrates the impact that non-academic factors may have on the retention and success of nursing and other postsecondary students.

A study conducted by ACT found that non-academic factors, including "academic-related skills, academic self-confidence, academic goals, institutional commitment, social support, certain contextual influences (institutional selectivity and financial support), and social involvement all had a positive relationship to retention" (Lotkowski et al., 2004, p. 7). In addition, their work also found that academic self-confidence and achievement motivation had the strongest relationship to college GPA.

Exhibit 4. Strength of Relationships of Individual Academic and Non-Academic Factors with College Retention (Lotkowski et al., 2004, p. 7)

Academic Factors	Practical Strength	Numeric Value[1]
HSGPA	Moderate	0.246
ACT Assessment scores	Moderate	0.124
Non-Academic Factors		
Academic-related skills	Strong	0.366
Academic self-confidence	Strong	0.359
Academic goals	Strong	0.340
Institutional commitment	Moderate	0.262
Social support	Moderate	0.257
Contextual influences (Institutional selectivity)	Moderate	0.238
Social involvement	Moderate	0.216
Contextual influences (Financial support)	Moderate	0.188
Achievement motivation	Weak	0.066
General self-concept	Weak	0.050
Other Factor		
SES	Moderate	0.228

Many factors influence the persistence and success of nursing students, including finance, life events, family commitments and responsibilities, work schedules, critical thinking, psychosocial issues, goal commitment, faculty support, including perceived faculty support, self-efficacy and self-esteem, stress, and time management (Megginson, 2007; Merritt, 2021b; Osakwe et al., 2022; Smith-Wacholz et al., 2019). Also important are issues that impact nursing students directly, such as caring and compassion, integrity, interpersonal skills, altruism and respect, and emotional intelligence (Ehrenfeld & Tabak, 2000; Harris et al., 2014; L. J. Hayden et al., 2016; McBurney & Carty, 2009; Perkins et al., 2013). Baldacchino & Galea (2012) found that other traits associated with nursing program retention include self-motivation, enthusiasm, and conscientiousness.

The following provides other specific information regarding non-academic factors as it related to nursing education.

Time/Family

Nursing educators often talk about family commitments and relations as both a plus and negative to students with regards to persistence and completion in programs. Many studies identified family time and responsibilities as a major inhibitor of potential program success. McEnroe-Petitte (2011) found that lack of time due to responsibilities for family and work were a primary reason for non-completion of BSN programs for RNs. These pressures can cause undue stress for students which can negatively impact their academic achievements (Porter, 2008).

Alternatively, support from family members and peers can have a positive impact on nursing student success (Chan et al., 2019; Donnell et al., 2018; Ferrell & DeCrane, 2016; Horkey, 2015; Tranter et al., 2018). Encouragement from nursing program peers, family emotional support, and support from other friends outside of school

[1] Numeric value: Population estimates of correlation. Robbins, S. B., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, A. (2004). Do psychological and study skill factors predict college outcomes? A meta-analysis. Psychological Bulletin, 130(2), 261-288.

have all been linked to positive academic outcomes for students (Priode et al., 2020).

And while studies have not shown a direct link between ADN program success and family structure (including marital status), others have shown that familial and peer support were higher among students who were more successful in their nursing programs (Olsen, 2017a; Rogers, 2010).

Faculty and staff found that many of their students run into life situations that make persistence and academic achievement challenging. Food scarcity has been noted as a problem for students and, as a result, our study college created a food pantry "of sorts" for students.

Students, especially women, are challenged with balancing childcare with studies and careers. Others lack a stable home life or an adequate support system to persist. It seems that nursing students "have a lot of drama and a lot of tragedy." There are students who come to class and have domestic violence in their homes. Some students lose their living spaces.

I think that there are many students that would love to see some sort of childcare availability. It has been a hot topic several times over the years I've been here. I think it would be great for our students. I think, you know, if the cost is the factor, I think there's some ways that our college can get creative with that to make sure it pays for itself. It's one of those services that I don't think we need to be worried about making money off.

The issue of attendance was brought up by college stakeholders, who noted that students who do not attend regularly do not complete or compete at the same level as most other students.

We do tend to have data that show that our number one predictor of completion is attendance. And that's college wide. So, I don't know that they've ever pulled it just for nursing, but I would assume it would be same.

Similarly, faculty noted that nursing students have trouble handing in assignments on time. As described, the successful nurse must be able to meet strict guidelines, but some students figure that they'll somehow be able to get credit for late or missing assignments later in the semester.

Self-Efficacy and Grit

Bandura's (1997) theory of self-efficacy is often cited as a measure of how a student can have, within themselves, the ability to persevere and progress in higher education. Students with "strong, resilient, and realistically-appraised self-confidence" are more likely to be self-motivated and determined to succeed (Jeffreys, 2015a, p. 428). These students see barriers as challenges rather than restraints and possess a self-awareness that clarifies tasks and direction. Kenny et al. (2011) suggest an association between "students' self-esteem or self-confidence and their ability to find academic success in BSN programs." Studies have found positive relationships between self-efficacy and nursing fundamental grades (Olsen, 2017a, p. 90).

The issue of "grit" as a predictor of academic perseverance and achievement has indented the literature, stemming from Angela Duckworth's 2016 book on the topic (Duckworth, 2016). Pusey-Reid et al. (2021) listed grit along with resilience and emotional intelligence in its importance towards academic achievement, stating that achievement is more than talent and cognitive capability. A study that compared Arabs and Jewish students in Israel looked at grit among nursing students, finding that there was an insignificant relationship between grit and nursing education outcomes (Halperin & Eldar Regev, 2021). However, it did find a relationship between those factors for male students.

Studies have found that "perseverance" was associated with higher academic achievement (Halperin & Eldar Regev, 2021). "Resilience, grit, self-efficacy, and emotional intelligence in higher education, there is growing recognition that academic achievement is the result of more than just talent and cognitive capability. Transitioning to higher education and advanced studies inherently bring about social and psychological stressors that require resilience, grit, self-efficacy, and emotional intelligence" (Pusey-Reid et al., 2021).

Motivation, Expectations, and Rigor

Personal motivation to succeed has been shown to have a significant impact on the ability of students to progress in nursing programs. Higgins (2005) found that ADN graduates believed that motivation was related to decreasing program attrition, while Pence (2010) found that motivation was positively related to first-semester retention. Institutions have used the Motivated Strategies for Learning Questionnaire (MSLQ) to gauge nursing student motivation. Pence and Suerth (2020b) found that students with higher MSLQ scores on the learning beliefs subscale were more likely to persist in their program than other students. Students who were retained had higher scores in task value, time and study, and effort regulation subscales than other students.

There is evidence that motivation is stronger among mature students. Older, mature nursing students may be more intrinsically motivated (e.g., value the work and effort) than younger students (El-Banna et al., 2017) and were also less extrinsically motivated (e.g., interested in external goals) than their youthful peers (Pence & Suerth, 2020).

Student expectations are also related to student success. Jeffreys (2015) posited that students may underestimate the requirements and effort needed to persist, achieve, and complete a rigorous nursing program. The misalignment of student and program expectations can lead to attrition for students (Fagan & Coffey, 2019; Harding et al., 2017).

Students also underestimate the rigor of nursing programs (Owen, 2020). Shorter programs may experience more of this underestimation than others. Smith et al. (2016) posit that longer programs allow students to ease into the rigor of the program, while four-semester nursing programs, like ADNs, and perhaps more importantly for LPN programs, do not allow students the opportunity for a gradual entrance. Institutions may benefit from transitioning students into their program quicker given the fast-paced, rigorous course material in nursing programs.

Psychological

Students in higher education are requiring more mental health services than at any other time. According to the Center for Collegiate Mental Health (2017), the use of counseling centers at colleges has increased between 30 and 40 percent between 2010 and 2015. While providing these services is important, Pusey-Reid et al. (2021) note that simply providing the service is insufficient and that institutions need to help students "build growth mindsets, resilience, grit, and a tolerance for failure (p. 601).

Freitas and Leonard (2011) administered a physiological and psychological survey to first-year nursing students and found that their basic needs—*access to food, shelter, and the ability to achieve personal satisfaction*—were not being met. Other studies find that nursing program attrition is related to psychosocial factors such as poor self-concepts and self-appraisal (Merkley, 2015; Ten Hoeve et al., 2017).

Mental health issues have become more mainstream for nursing students, such that the college provides counseling for students that require mental health assistance. There exists a case management system to help get students necessary services including both student success and medical/mental health services. Virtual office visits are also provided.

College instructors noted that some of their students simply don't have the confidence to succeed. "I think sometimes they limit themselves

because they don't believe enough in themselves. And I think we're going to have to instill in them that we believe in them."

Finance

Research illustrates that student finances can have a significant impact on nursing program success as well as NCLEX pass rates (Carr, 2011; Everett, 2022; Manieri et al., 2015a; Osakwe et al., 2022; N. Robert, 2018). Shelton (2012a) found that failing students in ADN programs had significant financial issues compared to other students. Sall (2009) and Rogers (2010) found that students who received more financial support from family members tended to have better academic outcomes.

Students who work while going to school can run into financial problems that subsequently impact their academic progression. Carr (2011) found that students will trade off study time for earning time to support their debt and living costs instead of valuable and important time preparing for NCLEX licensure. Students who failed their ADN program were more likely to experience significant financial issues compared to those who passed (Shelton, 2012a). Historically in higher education, students who work over 20 hours a week do less well in their academic studies than other students. However, nursing studies both support and negate this finding (Olsen, 2017).

Students who are English as a Second Language (ESL) tend to run into difficult financial circumstances compared to English speakers (Denham et al., 2018). This leads to higher dropout and ensuing economic uncertainties.

College faculty and staff find that finance is often a challenge for their students, especially for those from first-generation and low-income backgrounds. Many of the evening students who work full time do so because they need to work during the day. While faculty advise students that they will do better if they focus only on the program, they also realize that it simply isn't a financial option for many of them.

And while students are advised about financial aid, many do not complete their FAFSA on time or at all. As one faculty member suggested, this is a case of "complacency" by many students. The financial aid can be the break point in retention for some nursing students. Without the support of Pell Grants and student loans, it can be a matter of time before they aren't able to pay their college and living costs. Said one of our interviewees: "Many of our students are Pell eligible as well. They are a majority of our students. Even if your Pell covers all of your tuition, you have books, transportation, and childcare."

Transportation

The issue of transportation at college can be an especially challenging barrier for students. Some students use public transportation to get to campus. While it may be a short ride for some, others have multiple transfers and multiple stops. A study reviewed for this project found that the trip to the nursing campus could take 90 minutes via public transportation compared to 17 minutes by car. This can be further hampered by early and late classes, requiring students to start their days very early in the morning or end quite late in the evening.

Even students who own a car can be undone if something goes wrong. In fact, some students are one breakdown or one loan payment away from not being able to use their vehicle. Because finance is such an issue with many students, some colleges provide a safety net for these situations with a special account of funds for students that qualify. These are typically in the form of emergency student loans.

Institutional Factors

The prior factors describe issues predominantly outside the purview or control of the institution. These factors are, in effect, brought to the institution via students and the outer community. These may result in an opportunity or necessity of the institution to engage and provide solutions that may ameliorate negative situations. This is

where institutions must creatively provide a supportive learning environment that in turn allows students the best opportunity for academic success.

The following items are focus areas for institutions to be concerned and focused on, and include advising, mentoring, and coaching; instructional faculty; curriculum and instruction; remediation; recruitment and admissions; clinical and simulations; and institutional culture.

Advising, Mentoring, and Coaching

Research shows that support services, through advising, mentoring, and coaching, can improve fortunes for nursing students. Advisors and mentors can help two-year ADN students by helping them assimilate into the program (Ramsburg, 2007; Tinto, 1993). They can do this by asking questions or utilizing a questionnaire at the beginning of the semester and working with students to overcome the barriers that were identified. Some programs make faculty mentoring mandatory for all nursing students, requiring faculty to meet with students twice over a semester in addition to ad hoc basis (Petges, 2019). Studies found that faculty play an important role through the intentional provision of support to help students build resilience to setbacks that often come in rigorous programing (Pusey-Reid et al., 2021). A safe setting where students can self-analyze and develop a growth-mindset can help increase self-efficacy and academic resilience (Holdsworth et al., 2019).

Shifting faculty advising from transactional to relational advising allows the conversation to move beyond policies and procedures to "deeper conversations of experiences, coaching, and mentorship" (Noonan-Terry et al., 2019). Small group and one-on-one activities provided by faculty is conducive to social and academic integration (Chan et al., 2019; Donnell et al., 2018; Ferrell & DeCrane, 2016; Horkey, 2015; Tranter et al., 2018). Clinical coaches play an important role in providing assistance to the day-to-day challenges that nursing students encounter (Bridges et al., 2013).

Conversely, poor academic advising has a negative impact on students, especially those who are at-risk in the program. These students, when left with minimal guidance, easily fall out of programs without support (Gordon, 2019; Levinstein, 2018). In addition, the literature identified peer mentoring as a way to provide a level of comfort for nursing students to work with other students (Bridges et al., 2013; Li et al., 2011; Smith-Wacholz et al., 2019).

Instructional Faculty

Faculty play a critical role in the success of nursing students. The research literature often discusses faculty in a negative manner, describing them as unapproachable or intimidating (Owen, 2020, p. 233). In fact, negative faculty bias has been found to be a primary reason for student failure. Discrimination and stereotyping by faculty can have a negative impact on success (Sanner & Wilson, 2008). Conversely, students have noted that an open and respectful line of communication between faculty and students helps them find ways to help themselves (Owen, 2020). Higher-quality faculty/student interactions help build trust and foster students' sense of belonging inside and outside of the classroom (Osakwe et al., 2022).

Just the value of having the relationship with faculty and other students early on. I guess the word would be involvement. I do not know how it works for everybody else, but once I did that like I said before, when I'm studying, when I'm doing something, I do not feel alone in it. (Adorno et al., 2021, p. 2)

Shelton (2012) identified several studies that found that students who received greater faculty support were more likely to persist and find success academically. Other studies found that faculty interventions have a great impact on the success of ESL students (Sanner & Wilson, 2008).

Faculty who had an impact were more likely to support at-risk students by meeting them before and during the semester and creating positive

interactions (Fontaine, 2014; Froneman et al., 2016; Mckendry et al., 2014; Shelton, 2012). Conducting academic workshops or even having lunch with students fostered a positive environment for students (Merritt, 2021). The appropriate intervention by nursing faculty can help students adjust both socially and academically to the program (Mooring, 2016; Pence & Suerth, 2020).

Benner et al. (2009) strongly encourage ongoing faculty development to improve nursing education. They posit that there exists a lack of focus on teaching and basic teacher preparation in graduate nursing schools. Specifically, they suggest that programs and institutions should focus on:

- enhancing the practice of teaching in the profession;
- improving faculty development incentives and rewards for good teaching; and
- developing curricula and strategies that foster lifelong learning and clinical inquiry skills in student nurses. (Benner et al., 2009)

Curriculum and Instruction

Curriculum and pedagogy have been identified as barriers to learning for students, especially those who are at-risk academically. Studies have found that many students, including those from diverse backgrounds, have problems with traditional teaching methods employed in nursing classrooms (B. L. Fuller & Mott-Smith, 2017; Greenberg, 2013; Harris et al., 2014; James, 2018; Mulready-Shick, 2013; Onovo, 2019). Benner et al. (2009) claim that U.S. nursing programs are ineffective in teaching nursing science, natural sciences, social sciences, technology, and the humanities. Further, most of the course pedagogy was delivered through standardized lectures rather than through teaching methods that keep students focused on the patient experience. They argue that support is needed to help teachers "scaffold" their course work around patient care, including the use of non-traditional methods of teaching and learning.

Non-traditional pedagogies may help prepare nurses for professional practice (Benner et al., 2009; Rolf et al., 2019). The Mastery Learning Approach (MLA) is one non-traditional pedagogy that may help nursing students improve their academic achievement, especially for students from diverse backgrounds and those who are academically at-risk (Rolf et al., 2019). The MLA posits that all students can achieve educational outcomes given appropriate and quality instruction without time parameters. There are six points of the MLA, including block curriculum, active and collaborative learning, competency-based education, assessment learning, early experiential learning, and classroom design focused on learning and interaction.

Rischer (2011) underscores the following challenges in the nursing classroom:

1. Too much content in nursing education; educators need to emphasize what is most relevant for students.
2. Course content is non contextualized to practice, such that content is not connected to patient care.
3. Nursing educators tend to teach from PowerPoint, rather than stepping from behind the screen to engage students in active learning.
4. Classroom theory is fragmented and poorly integrated with clinical practice. These areas are typically separated in programs rather than integrated. As Rischer states, theory content that is taught is only randomly applied by the student in a clinical setting.

Other challenges include the focus on NCLEX-RN pass rates rather than preparing students for practice readiness and clinical judgment (Dickison et al., 2019; Kavanagh & Szweda, 2017). As well, early courses, including fundamentals in nursing, are attrition points for students. Students who fail these initial orientation courses are unlikely to rebound and succeed in nursing (Harding et al., 2017). Anatomy and Physiology (A&P), reading comprehension, math proficiency, and verbal aptitude were cited as important to the mastery of

nursing content (Higgins, 2005; Sayles et al., 2003; Wolkowitz & Kelley, 2010). Dosage calculation was also an area of concern (Koestler, 2015, p. 2). Anders et al. (2007) identified specific areas of concern that were challenges for students, including pathophysiology, pharmacology, and parent–child nursing content.

Kramer (1974) suggests that there exists a large disparity between the nursing curricula and pedagogy with the actual experiences in the field. Moving from knowledge-based facts and skills to guiding students to be critical thinkers is an important consideration (Lee, 2007). Kolb (2015) focused on learning theory where students improve their critical thinking skill set by repeated exposure to similar learning experiences. This active engagement in the learning process helps form their knowledge and experience. Benner et al. (2009) found that innovative curricular designs that engaged students in the learning process via clinical scenarios were more likely to help them prepare for challenging nursing settings in the 21st century.

Moving from a teaching-centered approach to one where the learner is the focus can bring result in positive changes in learning. Learner-centered teaching allows students to become responsible for their choices and provides options that attend to their preferred learning styles. Perhaps more importantly, it places the instructor as the facilitator (Billings & Halstead, 2020; O'Banion, 1997).

Active teaching-learning strategies that include case studies, concept maps, problem-based learning, and simulations help students connect to the information which increased comprehension and critical thinking development (Erickson & Lanning, 2014; Giddens, 2020). Simulations, in particular, have been found to have many academic benefits, including "uncompromised patient safety, improved cognitive and psychomotor skills, greater use of reflection on practice, and enhanced confidence and self-efficacy" (Koestler, 2015, p. 2).

Some of the research on improving teaching and learning include:

- Conducting regular critiques and reviews of curriculum and outcomes (Davis, 2011, p. 389).
- Setting high standards (e.g., 90 percent pass on assessment and lab skills), providing faculty-directed remediation using ATI remediation instruments (Rolf et al., 2019b, p. 960).
- Encouraging high-quality faculty-student interactions inside and outside the classroom and providing increased access to academic support and preadmission counseling programs (Osakwe et al., 2022).
- Focusing on competency-based and experiential learning to facilitate learning and interaction among students (Rolf et al., 2019b, p. 960).
- Providing tutoring to support the progression through the nursing program (Anders et al., 2007). (Manieri et al., 2015b, p. 26)

Gatekeeper courses in the nursing program, especially those in the 17-credit pre-health component at a college we reviewed, is designed, either by intent or by accident, to weed out students from entering the nursing program. In particular, Anatomy and Physiology (A&P) is consistently identified as a particular hurdle for students. Of course, it was raised whether students who cannot survive these initial offerings should pass on nursing regardless. Others wondered why a math course wasn't a prerequisite for entry into the nursing program when weights and volumes play such an important role. "When they [students] get into the program, their first semester is pharmacology and they're doing calculations and it's super-duper intense. They [faculty] have a very specific way they want these students can learn it."

Remediation

Remediation programs provide additional academic support to help students master

academic content and processes. This can be provided through a variety of strategies, including tutoring, after-class programming, summer bridge programs, and instructor-based workshops and one-on-one sessions. Remediation can also be embedded within the curricula. Effective remediation provides corrective feedback and procedures that help students address their learning difficulties (Guskey, 2010).

Sachar et al., (2019) suggest that nursing students are "intelligent but unskilled, and faculty are subject matter-savvy but illiterate in reading the needs of academically underprepared or untapped potential of students to guide them in becoming part of the profession and life-long learners" (Pusey-Reid et al., 2021a, p. 601). Remediation is one tool that can be used to help bridge the gaps between students with academic deficiencies and the expectations of faculty, dovetailed with the requirements of the nursing practice. Rolf et al. (2019) note simply that the literature finds that "remediation may aid student success" (p. 961).

A study of bachelor program nursing students conducted between 2016 and 2018 found that remediation had a positive impact on academic outcomes (Meehan & Barker, 2021). The study involved students who completed one of the following: (a) four semesters of remediation, (b) two semesters of remediation, or (c) no remediation, and used the ATI Comprehensive Predictor Exam as the academic measure. This retrospective cohort study evaluated the effect of a standardized remediation protocol on comprehensive predictor exit exam scores in undergraduate nursing students in their final semesters. Students completed either four semesters of remediation (n=85), two semesters of remediation (n=88) or no remediation (n=85). The study found that students who engaged in remediation had higher scores than those who did not. As well, those who had four semesters of remediation posted higher scores than those two took two semesters. This is an important finding, as Tipton et al. (2008) and Uyehara et al. (2007) found that nursing students who scored poorly in early program courses required remediation to progress.

In addition to the above finding, Meehan & Barker (2021) also found that the pass rate for first-time NCLEX-RN test takers increased to "almost" 100 percent after a remediation program was implemented, with 75 percent of students passing within 75 percent of the questions (p 256). Conversely, Rolf et al. (2019) stated that there was insufficient evidence to support the relationship of remediation and NCLEX-RN pass rates on the first attempt. However, they did note that remediation was key to mastery learning in nursing programs.

Recruitment and Admissions

The recruitment and admissions processes are critical to attracting students to the nursing profession. Historically, traditional methods of admissions have focused on academic achievement indicators, including SAT/ACT scores, high school GPA, and pass rates or scores on pre-requisite course work (Manieri et al., 2015). In fact, many nursing schools utilize higher academic standards for recruitment (Koestler, 2015). And although there has been a push for more holistic admissions criterion, standardized test scores are still a primary measure for nursing school admissions (Bennett et al., 2016; Cunningham et al., 2014). This has been promoted by accreditation agencies and state boards who have pushed for specific admission criteria (Capponi & Mason Barber, 2020).

Even with the reinforcement of higher standards, studies show that qualified applicants continue to be turned away from prelicensure programs. In 2021-22, 23 percent of qualified applicants were turned away from ADN programs (National League of Nursing, 2022), a percentage that has been as high as 45 percent in recent years. Seventeen percent of qualified students were rejected by BSN programs in 2021-22. In addition, the retention of nursing student remains an ongoing concern. (Horkey, 2015) found that 18 percent of nursing students leave before graduation while other studies show rates as high as 50 percent (Harris et al., 2014).

Clinical and Simulations

Clinical experiences are considered a critical part of the nursing preparatory process. These experiences often consist of direct patient care in a diversity of settings to increase the opportunity for nursing students to gain understanding and perspective. Sixty percent of US states have regulations about clinical education requirements and only 10 states have requirements about the number of clinical hours for prelicensure nursing education, which range from about 400 to 750 hours. A 1995 study concluded that 500 hours was an appropriate level for clinical practice, although others see this as an arbitrary figure (Bowling et al., 2018).

Clinical coaches work with nursing students by providing support and assistance through the clinical experience (Bridges et al., 2013). The clinical experience helps students "observe and gather information, recognize deviations from expected patterns, prioritize data, make sense of data, maintain a professional response demeanor, provide clear communication, execute effective interventions, perform nursing skills correctly, evaluate nursing interventions, and self-reflect for performance improvement within a culture of safety" (J. Hayden et al., 2014, p. 244). Criticism regarding clinical experiences include unsupportive clinical coaches and unpleasant clinical placements (Christo & Oyinlade, 2015; Merkley, 2015; Ten Hoeve et al., 2017).

The nursing programs at our college require staff to find up to 180 clinical spots each semester. Students go through four clinical rotations. The clinical experiences allow students to build a skill base for nursing as well as build a repertoire of practice based on the academic work in the nursing program. The clinical rotations also provide an opportunity for students to "test" out nursing and find out whether they like it or not. As well, students can check out potential employers, just as the providers of clinical experiences can see which students they may like to employ in the near future.

Some students are challenged with attendance and tardiness at their clinical placement. It was noted in our interviews that this was a particular issue with students from Africa who were regularly tardy, noting perhaps a cultural issue with regard to schedules.

Sometimes it is a challenge to get students into clinical rotations that are academically challenging and fully utilizes students in the workplace. Clinical sites may pay less attention to students and not provide them with the experiences necessary to reinforce nursing education. According to faculty, the hospitals and other providers of clinical experiences are happy with their students, and the students felt the clinical rotations were effective. While there may be some students who are unprepared for clinical, there has not been much negative feedback suggesting this is an issue.

And if we do have issues and those kinds of things, that's what we hear once in a while, we hear the positive. So, in my job, no news is good news. If my phone doesn't ring, I'm happy. That means things are going well.

Simulations, or SIMs, have grown in their complexity and usage at nursing schools in recent years. The technology affords an opportunity for "near real" experiences that can be duplicated and analyzed without having to worry about real patients in clinical environments. As was noted, simulations cannot replace all clinical experiences, including and especially emergency situations that provide a real situation with high anxiety and pressure, but they can provide an excellent opportunity to support the clinical experience. Many colleges have robust simulation programs.

I would venture to say we have one of the best skill labs in the state. We have a 10-bed skills lab that has some low-fidelity mannequins in it. And then we have a simulation hospital that four rooms and eight beds. We also have what they call a 3g mannequin that we can run codes on.

The faculty are able to code and record the simulations and play them back with a group of students. Thus, students get to use the SIMs for practice and then review their simulation as well as their peers. One faculty member said that she thought a study found that one hour of simulation was equivalent to two hours of clinical.

As far as this is the simulation, you're going to run what we control and what happens to that particular resident, or patient. And if they mess up, they're done. But we can reset, I always tell them. There's not a reset button on Grandma. But there is on the mannequin. So, simulation is a safe place to make errors.

Of course, simulations can't make up all the practice time for nursing. At some point, the interaction between nursing student and patient is essential.

I would prefer them to make those errors when they're on site versus in the clinical setting. We can't do 100 percent simulation. Graduate nurses that are competent need to be able to communicate with patients and be able to do the things that they need to do, whether it be assessment or skills or those kinds of things. Those need to be done on real real-life patients, not just a mannequin.

Institutional Culture

Research finds that environmental factors can influence the achievement, persistence, and retention of nursing students (Bean & Metzner, 1985; Jeffreys, 2007, 2012). Jeffreys (2012) states that environmental factors are as important as academic factors in determining the success of nontraditional nursing students. Environmental factors can be defined as those that are:

External to the academic process that may influence students' academic performance and retention and include financial status, family financial support, family emotional support, family responsibilities, childcare arrangements, family crisis, employment hours, employment responsibilities, encouragement by outside friends, living arrangements, and transportation. (Jeffreys, 2012, p. 112)

Family, in particular, can be either a "help or a hindrance" to student success (James, 2018). While family can be helpful by way of encouragement, support, and finance, they can also provide stress to the student. For international students, the added environmental stress of culture, worries about working visas, and finance can provide extra stress (Onovo, 2019).

High-Stakes Tests

Finding prospective nursing students who can persist to and through graduation is a primary goal for program leadership. Students who enter nursing programs and have difficulty passing core courses are less likely to graduate from programs, resulting in high opportunity cost to both students and institutions (Higgins, 2005).

High-stakes tests have served a purpose in helping identify students who can succeed in nursing programs as well as identifying risks and areas for focus in terms of interventions (Schmidt & MacWilliams, 2011). Normative examinations have been used for entrance into nursing programs as well as exits via comprehensive end-of-program examinations, such as the National Council Licensure Exam (NCLEX-RN). While standardized tests have been used in admissions for over 70 years, there has been a movement to provide more holistic approaches to program admissions (Bennett et al., 2016; Capponi & Mason Barber, 2020; Cunningham et al., 2014). However, this has not diminished the use of standardized tests for admissions decisions.

Research finds that entrance examinations, in tandem with student academic records, serve as effective screening tools for nursing programs (Manieri et al., 2015). The use of entrance tests can help predict whether students will be successful in nursing courses, the NCLEX exam, and ultimately become an effective nurse (Meehan & Barker, 2021). Studies have shown that high GPA scores and higher-than-average Pre-Nursing program exam scores can predict ADN success (Cornelius, 2012; Hernandez, 2011; Schmidt & MacWilliams, 2011). Other studies have shown that science components on a standardized test serves as a predictor of early nursing program success (Liu et al., 2018).

However, choosing an appropriate entrance examination that can effectively predict future nursing success is challenging (Schmidt & MacWilliams, 2011). The research on the utility of tests is somewhat equivocal and uneven, making it difficult for professionals to determine which test to use and also how best to use it (Manieri et al., 2015). Some studies have found that national entrance exams, like the ACT and SAT, provide a statistically-significant connection to future nursing success while others have found limited significance (Eudy & Brooks, 2021; Olsen, 2017).

There is concern about the fairness of standardized tests in nursing admissions and program progression. For instance, students who are English as a Second Language tend to score lower on standardized tests than English speakers. As well, the use of multiple-choice questions can be difficult for foreign students (Everett, 2022; Fettig & Friesen, 2014; B. L. Fuller & Mott-Smith, 2017; Greenberg, 2013; Onovo, 2019).

Text anxiety is often used as an example against the use of standardized tests. Students who are anxious about a test can achieve a lower score, even when prior academic achievement is controlled (Pintrich et al., 1991). Pence & Suerth (2020) found that students with lower GPAs tend to have difficulty with test-taking skills as well as managing their anxiety. Brown et al. (2021) also found that students with lower academic backgrounds exhibited higher levels of stress and anxiety. "High-stakes exams linked to nursing school progression is of serious concern and can have negative consequences that inhibit student learning and affect a nursing school's attrition rate" (Richards, 2020, p. 70). Moore et al. (2021) found that students who illustrated low test anxiety were more likely to score significantly higher on the HESI Exit Exam.

The TEAS Examination

The Test of Essential Academic Skills (TEAS) is a normed criterion reference test used at many nursing schools and colleges across the United States and Canada for entrance into their ADN and RN programs. ATI, the company that develops and administers the TEAS, says the test is an excellent predictor of first semester nursing program success (ATI, 2010). However, research on the efficacy and reliability of the test is equivocal (Wolkowitz & Kelley, 2010). Studies have found that the TEAS is better at predicting successful students than it was in predicting unsuccessful students (McGrath & Mister, 2021; Rolf et al., 2019).

Even so, several studies corroborate that the TEAS is a powerful predictor of nursing program success (Capponi & Mason Barber, 2020; Grace, 2017; Liu et al., 2018; Manieri et al., 2015a; McGrath & Mister, 2021; Nnedu & Davis, 2019; Rolf et al., 2019). One study found that the TEAS was 65.8 percent correct in predicting nursing program success (McGrath & Mister, 2021, p. 1), while another found the TEAS to be statistically significant in predicting nursing program success but explains less than 5.9 percent of the variance (Manieri et al., 2015b, p. 28). Grace (2017) found that the TEAS V had a significant relationship to completion of a practical nursing program and that students with lower TEAS were less likely to complete. A separate study found that the correlation of TEAS science and RN fundaments as higher than in other core parts of the examination (Liu et al., 2018). Diaz et al. (2012) linked TEAS with nursing success in a BSN program.

Nnedu & Davis (2019) identified several studies that found little empirical evidence of prediction of a BSN degree. Other studies have also found that the TEAS is not an effective predictor of the NCLEX-RN exam (Van Hofwegen et al., 2019). Newton & Moore (2009) found that the TEAS was not predictive of nursing program success, and other studies have confirmed slight or not correlation with program completion or NCLEX readiness (Schmidt & MacWilliams, 2011).

However, the research is limited in terms of predictive value. There is no clear summary of whether the TEAS serves as an effective predictor of nursing program success (Esper, L. L., 2009; Grace, 2017; Newton & Moore, 2009; Wolkowitz & Kelley, 2010). As with other analysis, tests are best used in partnership with other academic indicators, such as high school and college GPA. There are studies that link the TEAS to NCLEX pass rates, including a study by Grace (2017) who found a statistically-significant relationship between TEAS score, ethnicity, program completion, and NCLEX success. A study in North Carolina found that the TEAS comprehensive test was statistically correlated to NCLEX performance (Ukpabi, 2008).

At our study college, a minimum level of 60 (out of 100) on the reading and comprehensive skill sections of the TEAS is required for admissions. One staff member commented that this very low threshold is a problem for an open-admission institutions like theirs. Students can take the TEAS up to three times in a calendar year. If they do not pass the TEAS test, they must wait a month before taking it a second or third time. Instructors suggest that if students do not pass it on their second attempt, they are unlikely to do so on their third. This belief aligns with national data. The challenge can be in orchestrating the re-taking schedule given that the TEAS is used to determine nursing program eligibility.

Faculty and staff noted two important factors that helped students improve their TEAS performance:

- **Communication.** There seems to be some level of disconnect between pre-nursing programming and the nursing program itself, with regard to coordination and support. The college uses the Navigate system to share information. Faculty can refer students for tutoring or other services. The question, again, becomes about whether faculty use Navigate appropriately.
- **TEAS Test Prep.** TEAS test prep workshops have been used to help students prepare for the TEAS. This is typically an 8–10-week program. Data from the program shows that the prep was helpful in getting students to pass the TEAS (>60) so they can enter the PN program.

The National Council Licensure Examination (NCLEX)

The NCLEX examinations are developed by the National Council of State Boards of Nursing (NCSBN). There are two exams: the NCLEX-RN for Registered Nurse licensure and the NCLEX-PN for Practice Nurses. Given the high stakes of the NCLEX exams, nursing programs look to ensure that their student graduates will pass the exam. Passing the NCLEX on the first attempt has become an indicator of nursing program quality. In 2022, the first-time pass rate on the NCLEX-RN and NCLEX-PN was 79.9 percent for US-educated students (NCSBN, 2023). The repeat pass rates were 43.7 percent for NCLEX-RN and 35.7 percent for PN.

Nursing schools with a lower first-time pass rate look for interventions to help students pass the second time (Meehan & Barker, 2021). As illustrated above, passing the second time can be challenging for students.

NCLEX success has been predicted by many factors, including pre-admission GPA, entrance exam scores, interview scores, nursing program GPA, remediation, and academic performance in Psychiatric/mental health, pharmacology, and fundamentals (Koestler, 2015; Landry et al., 2010; Moore et al., 2021b; Rolf et al., 2019). Studies have found that non-academic factors can also predict NCLEX, including ESL status (related to stress) (Flowers et al., 2022).

The following is a summary of comments from college faculty and staff about why students don't pass the NCLEX.

- **Dedication.** Some staff members point to student dedication as a prime reason Students have below average pass rates on the NCLEX exam, suggesting that if they were more dedicated to their studies, they would pass the test. "But if they just come in, and they're just trying to skate through like a normal class, it's not going to happen."
- **Culture.** There were many fingers pointed at the culture backgrounds of students, especially with foreign students or those whose first language was not English. Given that there are a high number of ESL/foreign students, this seems to be a very important area to consider. One person posited that students, especially female students, who come from different countries and often different cultural contexts, have trouble passing the NCLEX exam. She noted that the test itself, which says it controls for cultural differences, poses challenges for students from different cultures where females may be defined differently. This can be problematic in how some test items are written. Others noted that learning nursing and medical terminology in English for an English speaker is hard enough; coming in with perhaps fluency but not at a master level of fluency forces these students to break down the materials piece by piece, which lengthens the learning process.

I'll never forget, the first semester I taught here. I had a student in my classroom from China. And she was struggling. And when I sat down and visited with her, she showed me her textbook. In the margins, she had translated everything in her textbook into Chinese. And she was telling me that when she takes an exam, she reads the question in English, translates it into Chinese, comes up with the answer, and then had to translate it back into English. Very difficult. I mean, it just blows my mind, I can't even imagine doing that. My happy story on that, though, is that a few years later she came back; she was just getting ready to graduate from an RN completion program at a neighboring Community College. And she was so excited because, number one, she was going to graduate from the RN program. And number two, she said, I am finally thinking in English.

- **Unpreparedness.** A major challenge for some colleges is that they may be a secondary choice for students. As one faculty member stated, they seem to be "scraping the barrel" to get people into the program. It was noted that some students do not have the initiative to prepare specially for the NCLEX. Others noted that there seems to be a lack of science and math prowess, which "snags" students.
- **Test Anxiety.** It was reported that many students have test anxiety which leads to poorer performance on the NCLEX. However, the reality is that the NCLEX is a high-stakes examination and most people who take it are likely anxious to a degree. The truth is that students who are less prepared for the exam are much more likely to be anxious because they have an understanding of their underpreparedness.
- **Test Prep.** One person acknowledged that students do not necessarily understand how to take a high-stakes test like NCLEX, and that the answer isn't always about the right answer, but the "best" answer from a series of distractors or alternatives. In Pre-Health studies, the college uses TEAS Test Success to help students prepare for the TEAS test. However, many students complain that it is "busy work," even though it provides them with test questions and answers and allows them to use critical thinking to contemplate the "best" answer, rather than the only answer.

Defining a Successful Nursing Student

When we asked staff to define what a successful nursing student looks like, some of the descriptions included students who complete on-time, pass the NCLEX on their first attempt, have high TEAS test scores, and are academically prepared for the rigor of the studies, as well as those who have the "grit" to persevere.

Other additions include a look at their success in clinicals or they enter the profession. "Being in a professional position where they're thriving in the nursing field, you know, finishing the program, and then moving into a nursing position that's different from what they're doing."

To succeed nursing school, students need to be academically prepared. "Most of the ones that do the best have come to us with a solid math and science background. A lot of people don't realize how important that is for nursing. But that can be very helpful in terms of being prepared." It was noted that students who have taken biology and then anatomy and physiology before nursing do much better than other students. Students without strong backgrounds in the sciences and mathematics tend to play catch up during the pre-nursing program.

The discussion of grit is interesting to several staff members. One mentioned that an antecedent to grit is a strong support at home, including emotional support. An example was provided of a student who did not get an A in A&P, but their grit and determination made them a successful nurse practitioner. "She really had a lot of grit, and she went through the program and really applied herself. I don't think an 'A' necessarily tells you the kind of nurse that that person is going to be."

I have many of them in my classes right now, that are exactly like that. They're just bound and determined, and they're going to do whatever it takes. Today, [she] looked like she hadn't slept for, I don't know how many hours, and she told me she worked through the night and didn't get a chance to get any sleep this morning. She was just dragging. But she was there. And she was doing the work. And she was studying. So, she has she has tremendous grit.

What does a successful nursing student look like?

- thrives in a professional position.
- has a solid math and science background.
- has "grit" and perseverance.
- comes prepared to learn and succeed.
- has previous health care experience.
- has prior higher education experience.
- enters the program with realistic expectations of their capability and a realistic understanding of what it takes to succeed.
- is a critical thinker.
- is willing to put in the time.
- is mission driven.
- is passionate.

Preparedness and Experience and Perceptions. It is important that students have a solid understanding of what the nursing program is about. "Some students are much more prepared on that aspect, and some of them have no idea… I just really think the students that are taking it upon themselves and learn that for themselves, they're going to be highly successful."

Some students entering the program come from the health sciences field and tend to be more successful than other students. This is perhaps due to their understanding of the profession and the expectations of the program.

I think a lot of our students that are going into nursing have previous health care profession. I think a lot of them are coming out of assisted living or care homes where they have been in positions like CNAs. So, they're wanting to move out of that into more of a position where they have more

control and autonomy in their job and with patients.

There's a big difference between students who come who have been in the health sciences before or coming for as an occupation. At least they have some sense of the challenges … having that experience, even if you're not hands on direct patient care, you understand the mentation, the mindset, the flow. And kind of even the urgency of understanding situations in the moment where if you've got somebody that's never even done anything… it's not like working at Walmart, it's not working in a factory, it's totally different. So, if they don't have that already, it is a learning curve. Whereas people that bring that to the program are already ahead of the game.

Dedication. Students who are dedicated to their studies tend to do better than other students. "The successful student is going to know to dedicate the majority of their life from this point on to nursing. They're going to know how to prioritize and they're going to take it on themselves to either enjoy the class and learn from it or not." Others called it being "motivated to persevere" and able to take advantage of college resources that to help them along the way. Knowing when to ask for help and be able to accept advise.

Critical Thinking. Staff suggested that critical thinkers tend to do better than other students. These are students who can think through a problem rather than simply regurgitate information.

Because I see a lot of students, they do the short-term memorization to get through the class. But once they get to the nursing program, I don't know if they know how to really, truly work through the process.

Some of the graduates of our program have gone on and done really amazing things. They were excellent problem solvers. And they really took what we taught them and put application to it.

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