

# Admission Criteria as Predictors of Success in a Family Nurse Practitioner Program

By

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## Background

Jobs for nurse practitioners (NP) are expected to grow by 31% over the ten-year period ending in 2024 and command a median income over \$100,000 per year<sup>1</sup>. Additionally, the Affordable Care Act (ACA) supports the expansion of the NP role to meet the increasing demand for highly educated health care providers<sup>2</sup>

The increased demand for NPs to fill these positions puts pressure on nursing educational programs to produce more graduates. Graduate nurse practitioner programs fill their seats with qualified applicants but attrition and failures impact the overall number of NPs graduating and thus entering the workforce and affect the financial budgets of nursing schools who project revenue based on an expected enrollment. It is imperative that graduate nursing programs select applicants who will not only complete the NP program but also pass the certification exam and successfully transition into the NP role. Therefore, the purpose of this study was to identify predictors of success in the current admission criteria to the family nurse practitioner (FNP) program at a private university in northeast Florida and use these findings to refine and/or modify the current admission requirements.

The author is faculty at a school of nursing that offers a Master's of Science in Nursing (MSN) FNP track within its graduate program. Admission to the program is very competitive.

Despite attempting to admit only the most qualified applicants, there are still a small number of students who struggle academically with the program and must either permanently withdraw from the program or are dismissed for academic reasons. These withdrawals and dismissals are unsettling to both student and faculty and may result in a student financial and emotional investment into an academic program they are unable to complete.

### **Review of Literature**

A review of the literature revealed few articles specifically addressing nurse practitioner admission selection criteria. Most research on advanced practice nurses focused on certified registered nurse anesthetists (CRNAs) or were generalized for graduate nursing programs. Factors that have been studied include undergraduate GPA, Graduate Record Examination (GRE) score, clinical experience and personal/professional characteristics

#### **Grade Point Average (GPA)**

Several studies have reviewed cumulative undergraduate GPA as well as GPA specific to nursing/scientific criteria as a predictor of success in NP and CRNA programs. Scientific GPA was generally defined as courses with a scientific basis and excluded research and leadership courses. Higher GPA has consistently been tied to successful completion of advanced practice programs as well as to successfully passing the respective certification exam<sup>3,4,5,6</sup>

#### **Graduate Record Exam (GRE) Score**

Several researchers have evaluated the benefit of GRE scores in predicting success in graduate programs, including NP tracks. Katz et al.<sup>7</sup> found the GRE to be more of a barrier to admission into a program than useful as a predictor of successful completion. Neither Hulse et

al.<sup>8</sup>, Ortega et al.<sup>3</sup> nor Suhayda, Hicks and Fogg<sup>5</sup> found GRE useful as an admission requirement. However, Burns<sup>4</sup> found that GRE tied to GPA was a strong predictor for successful progression in a CRNA program.

### **Clinical Experience**

Increasingly schools are accepting students into NP programs immediately following graduation from pre licensure BSN programs. El-Banna et al.<sup>9</sup> found no association between years of prior clinical experience and cumulative GPA, clinical course GPA and disruption in progression (failure or probation during the program) in a nurse practitioner graduate program. Burns (2011) found an inverse association between years of critical care experience and successful progression in a CRNA program although Zaglaniczny<sup>6</sup> found that more years' experience predicted higher scores on the CRNA certifying exam. Bolender<sup>10</sup> also found that more experience predicted higher scores on the family nurse practitioner certification exam.

### **Personal/Professional Characteristics**

Personal/Professional Characteristics have been evaluated as predictors of success in NP programs. In a qualitative study using focus groups, Crosby et al.<sup>11</sup> found that faculty considered personal characteristics (being ethical, a critical thinker and possessing good judgement) most important, professional characteristics (clinically competent, patient advocate) and clinical skills (effective interpersonal communication, ability to synthesize information from various sources) moderately important and kinds of clinical skills of lesser importance (specific settings). These findings were similar to findings obtained by Reese<sup>12</sup> who found that personal attributes/attitudes were regarded highest by faculty and CRNAs followed by clinical skills/proficiency, and professional knowledge/experience in admission characteristics most likely to predict successful

completion of a CRNA educational program. Bolender<sup>10</sup> found that the grade obtained in pharmacotherapeutics and pathophysiology also correlated positively with certification exam score.

Age was found to be inversely related to success by both Ortega et al.<sup>3</sup> and Zaglaniczny<sup>6</sup>. The authors suspected this might be due to longer periods away from an academic environment<sup>3</sup>. Initial educational education (Bachelors of Science in Nursing (BSN) vs Associate Degree in Nursing (ADN)) did not predict scores on the CRNA certification exam<sup>3</sup>.

In summary, a higher undergraduate GPA and fewer years' experience in nursing both have been found to correlate with successful completion of an NP or CRNA program. There has been no study done to evaluate at what point years' experience becomes a barrier to successful completion or if years' experience is associated with longer time away from enrollment in an academic environment. GRE has not been found useful in predicting success when used alone. Type of nursing experience nor type of initial pre-licensure program also did not correlate with successful completion of an NP program.

## **Methods**

This study used a retrospective predictive correlational design and was approved by the Institutional Review Board of the university prior to initiation. As this study involved only review of student academic records, no individual consent was required. Student information was evaluated only as aggregate data with no personal identifiers used.

Academic records of all 209 students who matriculated into the MSN/FNP program from its inception in 2007 through 2015 were evaluated. Student outcomes were classified based on those who successfully completed the program and those students who withdrew or were dismissed permanently from the program for poor academic performance (course

failure/academic probation). Predictor variables included cumulative undergraduate GPA (UGPA), scientific GPA (SGPA), successful completion of undergraduate pathophysiology prior to enrollment in the FNP program, Graduate Record Examination (GRE) scores (as applicable), years' experience in nursing and type of nursing experience prior to enrollment in the program, student age at matriculation into the FNP program and type of initial RN education program (BSN vs ADN program). Scientific GPA was calculated by a review of transcripts (BSN or ADN/RN to BSN) and based solely on nursing theory courses including pathophysiology and pharmacology. Clinical grades were not calculated in SGPA nor were grades for courses such as nursing leadership research. These variables were chosen based on the literature as well as on faculty feedback from their experiences teaching in the NP program. Successful completion of advanced pathophysiology has been recognized as a major barrier to normal progression in the FNP program; faculty felt that successful completion of undergraduate pathophysiology course would prepare the students for advanced pathophysiology and aid in their success. Additionally, there was concern about inflated GPAs arising from students who successfully completed RN to BSN programs. Thus, type of initial RN program as well as scientific GPA were included as predictor variables. Faculty also felt that certain clinical experiences (Emergency Department, Critical Care) might also enhance a student's ability to grasp NP concepts thus type of experience was included as a variable.

## **Results**

The statistical analysis was completed using both logistic regression and ANOVA using SPSS v 24 software. The sample size was 209 subjects although there was missing data for many of the cases which hampered the statistical analysis. The missing data was excluded for each case but other data analyzed.

Of the 209 students who were admitted into the program, 80.4% successfully completed the program, 10.0% withdrew voluntarily from the program (while passing) but 9.6% either withdrew from the program while failing or were dismissed from the program for academic reasons.

The average age of the sample at admission to the program was 35.8 years with a minimum age of 22 years and a maximum of 61. The average age at admission of those who graduated was 34.8 years vs 39.2 year of those who did not complete the program. Twenty five percent of the sample was less than age 30, 50% was under age 34, 75% under age 40. There were 43 total students over age 40 with 11 of them over age 50 at the start of the program. Of this subset of 43 students, 30 (69.7%) successfully completed the program.

The average years of experience was 7.86 years with a minimum of 0 years and a maximum of 36 years. The student with 0 years of nursing experience had been a practicing physician in another country. The average undergraduate GPA was 3.52 and a scientific GPA of 3.21. Although GRE was not taken universally (only 19 in the sample), the average score reported was 795.7

Of the reported cases, 32.3% listed emergency nursing as their primary clinical experience. Another 29.3% listed critical care and 27.9% were primarily medical-surgical nurses. Nurses reporting primarily pediatric, obstetrical, ambulatory care or non clinical positions totaled less than 1% of the subjects.

The initial educational preparation of the cases was fairly evenly divided; 46.5% received a BSN as their initial RN education and 53.4% earned their ADN and then completed an RN to

BSN program. Two thirds of the participants completed an undergraduate pathophysiology course (68%) versus 31.5% who did not.

The outcome variables were successful completion of program and not successful completion which included students who withdrew or were dismissed for academic reasons. Of the variables evaluated for predicting success in the FNP program, age was the most significant ( $p=0.04$ ). The mean age of those who did not complete the program was 4.5 years older than those who did ( $p=.007$ ). As student age at admission to the program increased, successful completion decreased.

While years of experience was not a significant predictor ( $p=0.195$ ), students who did not graduate had more experience than those who successfully completed the program (9.14 years vs 7.36 years). There was also a positive correlation ( $r=.569$ ) between years of nursing experience and age at admission to the NP program. The average age of incoming NP students earning an ADN degree as initial RN education was 36.19 years vs 35.39 for those earning a BSN as their initial RN education but was not significant as a predictor of success. The GPAs of both groups was fairly similar (3.51 vs 3.50) but the BSN graduates had higher, but not statistically significant, scientific GPAs (3.25 vs 3.10). However, higher undergraduate GPA ( $p=0.005$ ) and higher GRE scores ( $p=0.033$ ) were predictors of program success.

The type of RN experience also did not show significance but there was a significant relationship between years' experience and initial RN educational preparation ( $p=0.004$ ). Students who were originally prepared at the ADN level had more years' of nursing experience than those prepared at the BSN level upon entry to the program. Completion of pathophysiology in the undergraduate program was not a significant predictor but there was a positive association

with successful completion of the NP program (OR 1.74,  $p=0.244$ ). Students who obtained their initial nursing education at the BSN level were more likely to have a pathophysiology course prior to admission into the NP program ( $p=0.002$ ) and ultimately, these students were more likely to progress through the program without interruption.

### **Conclusion**

Age at program admission, undergraduate GPA and GRE score were the only variables that predicted student program completion in this analysis. However, there was still much to gain from this review of data. Both age at admission and years' experience positively correlated to program completion but older students and those with more years' nursing experience were more likely to be unsuccessful in the NP program. Younger students and those with fewer years of experience were more likely to successfully complete the program. However, at what tipping point this transition occurs was not identified. Although not studied here, there may be a "sweet spot" for age and experience for RNs beginning NP educational programs who have sufficient clinical experience to grasp complex concepts but have not become inflexible in thinking and are able to transition to a different clinical role. Educational programs can look to provide special services for those students who return to school at a later age to facilitate their success.

Academically both undergraduate GPA and GRE score predicted successful completion of the NP program. That either of these two variables is a successful predictor should not come as a surprise to anyone. Students who are strongest academically in undergraduate programs are more likely to continue their strong performance in graduate school. In contrast scientific GPA did not predict successful completion. Although scientific GPA was very difficult to calculate and was based on transcript reading, use of scientific GPA should eliminate any possibility of



grade inflation associated in RN to BSN programs. Similarly, the GRE is a measure of a person's ability to analyze, evaluate and synthesize information as well as critically think and problem solve<sup>13</sup> so it should not be surprising that higher GRE scores predict successful completion of the NP program. However, Katz et al.<sup>7</sup> identified the GRE as a barrier to potential applicant.

One variable that was not addressed in this study was length of time between last educational program and admission into the NP program. While age alone was associated with less success of completion, it is unknown if there is a co-relationship with duration of time from BSN completion to beginning an NP program. Although initial RN education (BSN vs ADN) was not a positive predictor for successful completion of the NP program, length of time from last formal educational program was not evaluated. Over half (53.4%) of admitted students were ADN graduates who later completed an RN to BSN program. It is unknown if students who more recently completed an RN to BSN program were more successful in the program due to their more recent success in an educational program.

This study also did not take into consideration students enrolled in a part-time program of study vs a fulltime program of study. Because fulltime study requires a greater commitment of time than part-time study and because most NP students continue practicing as RNs while in school, part-time students may demonstrate a more successful progression.

Although there were very few statistically significant findings in this study, the information gained can be useful in refining admission criteria for NP programs. Many of the findings collaborated findings from earlier studies including age, GRE and GPA as predictors of success in NP programs. Requiring GRE scores as part of an admission package has been

debated for years with many programs no longer requiring them. However, if programs see a large attrition or failure rate in their programs, it may be worth reconsidering its inclusion in admissions requirements. As age was a significant predictor in this study and in others, future studies need to investigate at what point does age become a hindrance to student success and what interventions can be utilized to improve this population's successful completion in NP programs. Also, important would be to research the impact of number of years away from formal schooling as it relates to successful completion. Students completing RN to BSN programs, even if many years from their initial RN program, may have an advantage over BSN graduates who graduated from their initial schooling at the same time because they have more recently been students. Becoming familiar with academic expectations may benefit students who more recently were in school. Many programs are inaugurating boot camps to ease students back into an academic environment and expose them to academic expectations prior to program start.

While there is no ideal combination of admission factors that successfully predict which students will successfully complete NP programs, it is vital that educational programs prepare NP graduates to take on the challenges facing the profession. The profession needs NPs to fill demand for qualified health care providers. Appropriate selection and admission of NP students is the first step to meeting demand.

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