



Early predictors of study success in a Dutch advanced nurse practitioner education program: A retrospective cohort study



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ABSTRACT

Background: Study delay and attrition are major concerns in higher education. They cost time and effort, and threaten the availability of higher qualified professionals. Knowing early what factors contribute to delay and attrition may help prevent this.

Objective: The aim of this study was to examine whether student characteristics, including a literature study report grade as a proxy of cognitive abilities, predicted study success in a dual advanced nurse practitioner education program.

Methods: Retrospective cohort study, including all 214 students who between September 2009 and September 2015 started the two-year program at the HAN University of Applied Sciences in Nijmegen, the Netherlands. Study success was defined as having completed the program within the envisaged period. Variables examined included: age, gender, previous education (bachelor's degree or in-service training in nursing), work setting (general health, mental health, public health, or nursing home care), and literature study report grade (from 1 to 10). A hierarchical logistic regression analysis was performed.

Results: Most students were female (80%), had a bachelor's degree in nursing (67%), and were employed in a general healthcare setting (58%). Mean age was 40.5 years (*SD* 9.4). One hundred thirty-seven students (64%) had study success. Being employed in a general healthcare setting ($p \leq 0.004$) and a higher literature study report grade ($p = 0.001$) were associated with a higher study success rate.

Conclusion: In advanced nurse practitioner education, study success rate seems associated with the student's cognitive abilities and work field. It might be worthwhile to identify students 'at risk of failure' before the start of the program and offer them extra support.

1. Introduction

Study delay and high study attrition are major concerns in higher education, including nursing education. These cost time, effort and money, and are disappointing for the student as well as for the educational institute. Moreover, high attrition threatens the availability of higher qualified professionals to meet high healthcare standards as well as the increasing demand on the healthcare system caused by the aging of the population. Early identification of factors that contribute to study delay and attrition may help prevent this.

Previous studies have shown that male gender, lower age, and lower entry qualifications were associated with student attrition in higher nursing education programs (Bennett et al., 2016; Lancia et al., 2013; Dante et al., 2011; McLaughlin et al., 2010; Mulholland et al., 2008; Pryjmachuk et al., 2008; for a review of the literature regarding the predictive value of admission scores on program completion, see Bennett et al., 2016). The evidence from these few studies is not strong,

however, as the findings were inconsistent, possibly as a result of differences in the program, the student characteristics, and the definition of the dependent variable (Table 1). In addition, the findings do not necessarily apply to advanced nursing programs, which are often dual programs. Students in these programs are generally older and often have more relevant work experience compared to students in general higher education programs (Wilson et al., 2011). Other entry requirements may apply for older students, at least in the Netherlands. To our knowledge, only one recent study has examined possible predictors of attrition in an (online) nurse practitioner program (Knestrick et al., 2016). Higher instead of lower age, a work setting other than in adult-gerontology acute care, and a lower number of credits accrued in the first term were associated with withdrawal and leave of absence of students (Table 1). More research on this topic in advanced nursing programs is needed.

The aim of this study was to examine whether student characteristics (age, gender, previous education, work setting, and a literature

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Table 1
Overview of literature on early predictors of student attrition in higher and advanced nursing education.

Authors	Education program	Student characteristics	Outcome variable	Factors associated with outcome variable	Factors not associated with outcome variable
<i>Higher nursing education programs</i>					
Bennett et al., 2016	American 4-semester bachelor's degree program	341 students who started between fall 2010 and fall 2013, 88% female, age not reported	Ability to graduate within envisaged period (82%)	Higher nursing admission GPA, higher science GPA, and higher HESI Admission Assessment anatomy and physiology subscale score	HESI Admission Assessment entrance examination cumulative score, math subscale score, and reading subscale score
Lancia et al., 2013	Italian 3-year bachelor's degree program	1006 students who started between 2004 and 2008, 65% female, mean age 23 years/median age 20 years	Ability to graduate within envisaged period (61%)	Female gender, higher grade for upper-secondary diploma coursework, and a technical and professional education type of upper-secondary school attended (vs classical studies and science education and other types)	Age, admission test score
Dante et al., 2014*	Italian 3-year bachelor's degree course	117 students who started in the academic year 2004–2005, 70% female, mean age 23 years	Ability to graduate within envisaged period (69%)	Higher final marks in secondary education and ranked 1st to 40th in BNS entry exam (vs ranked 41st or lower)	Age, gender, nationality, previous education (mostly high school), previous work experience, previous work experience as auxiliary nurse or nurse aid
Wilson et al., 2011	Australian 3-year bachelor's degree program, deliberately designed for early exposure to clinical practice	101 students who started in 2006 and 2007, 85% female, mean age 21 years (range 16–50 years)	Ability to complete the program (66%)	Previous nursing experience and knowing a nurse before	Age, gender, subjects taken during final year of secondary school, entrance interview scores
McLaughlin et al., 2010	British university-based common foundation program for a preregistration higher education diploma (equivalent to first 2 years of a bachelor's degree)	350 (of 384) students from one cohort with follow-up data, 91% female, mean age 21 years	Failure to complete the program (12%)	Male gender	
Mulholland et al., 2008	British 3-year preregistration program	1808 (of 2530) students who started in 1999, 2000 or 2001 (excluding those who did not follow the intended program), 80% female, median age 25 years	Failure to complete the program (21%)	Age younger than 26 years, country of birth being United Kingdom or non-English speaking countries (vs Ireland, Zimbabwe or other English-speaking countries), white and Asian ethnicity (vs Irish, Black or other), and already having a degree as educational qualification (vs vocational, ordinary, access or advanced)	Gender
Przyjmachuk et al., 2008*	British higher education program	1173 (of 1259) students who started between summer 2002 and autumn 2003, 85% female, mean age 26 years/median age 21–24 years (based on 1259 students)	Ability to complete program (exceeded 25% in all four cohorts)	Higher age (medians 24 vs 21 years) and higher entry qualification (4 categories)	Gender, ethnic origin (white British vs non-white or non-British origin, type of entry qualification (academic vs vocational qualification)
<i>Advanced nursing education program</i>					
Knestrick et al., 2016	American 19–27 months online nurse practitioner program	All 847 students who started between January 2013 and January 2015, 92% female, mean age 33 years	Withdrawal or leave of absence within first 2 terms (20%)	Age over 40 years, midwifery/woman's health or family care (vs adult-gerontology acute care), and lower number of credits enrolled in term 1	Full-time vs part-time status, undergraduate GPA, undergraduate science courses/credits/GPA, undergraduate statistics grade/credits

GPA, grade point average; HESI, Health Educational Systems Incorporated; BNS, bachelor's degree in nursing.
* Results of the multivariate analysis were not reported since these were influenced by included within-program factors.

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