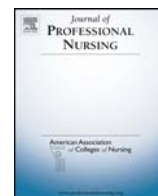




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Predicting student attrition using social determinants: Implications for a diverse nursing workforce

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ABSTRACT

Background: Attrition of academically qualified nursing students affects the size of the nursing workforce. A better understanding of the multifaceted predictive factors of attrition is needed to inform targeted interventions to promote program progression and maintain an adequate nursing workforce.

Purpose: The purpose of this study was to identify demographic, academic, and social determinant factors associated with attrition at the end of the first semester in an upper-division baccalaureate nursing program.

Method: Students' demographic and academic data from an administrative database were combined with social determinants data collected via a web-based survey.

Results: Among this cohort ($n = 164$), social determinants were significantly associated with attrition. A significantly greater percentage of students who failed were born outside the United States (U.S.), had one or both parents born outside the U.S., reported English was not the primary language spoken in the home, and were racially/ethnically diverse.

Conclusions: Attrition was primarily among students with diverse racial, ethnic, and/or cultural backgrounds, which has implications for achieving a diverse nursing workforce. Proactive strategies to support success should be especially targeted on diverse students.

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According to the American Association of Colleges of Nursing (AACN), nursing schools in the United States (U.S.) turned away 47,341 qualified applicants from baccalaureate nursing programs in 2015 (AACN, 2016). With the high number of qualified nursing applicants turned away each year and the high institutional costs associated with student attrition (Raisman, 2013), nursing programs are challenged to answer the question, "Which applicants are most likely to succeed?" Factors associated with student attrition are multifaceted and often interrelated. These factors include individual student characteristics, institutional processes, and social, political, and economic factors, commonly referred to as social determinants (Urwin et al., 2010). A better understanding of how these factors promote or inhibit student retention in nursing programs is critical to guide interventions to promote student success. Therefore, the purpose of this study was to identify demographic, academic, and social determinant factors associated with attrition at the end of the first semester in an upper-division baccalaureate nursing program.

Background

Attrition is commonly defined as the departure from or delay in successful completion of program requirements (Tinto, 2012). While attrition rates are not commonly reported outside the institution, accredited nursing programs are required to report program completion rates to their accrediting body. By definition, a program completion rate is the percentage of students who graduate within a defined period of time, often within 150% of the normal time for completion. The Accreditation Commission for Education in Nursing (ACEN) and the Commission on Collegiate Nursing Education (CCNE) expect nursing programs to maintain completion rates of 70% or higher to demonstrate program effectiveness. Although completion rates for CCNE accredited prelicensure programs are not published, the most recently published completion rates for ACEN accredited prelicensure baccalaureate programs averaged 74% (ACEN, 2015). While this rate is 14% higher than the national graduation rate of 60% for students seeking a bachelor's degree at four-year institutions (National Center for Education Statistics, 2016), optimal nursing program completion rates are needed to meet society's healthcare needs. Although many programs have re-entry pathways for students who are unsuccessful in nursing programs, retaking course work has financial implications and delays entry into the workforce. Moreover, if predictors of attrition are not mitigated, students are unlikely to be successful in repeat attempts of coursework. Such re-entry

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pathways could be considered a reactive approach; an academic reaction to student failure. A proactive, preventative approach may be more successful.

Among nursing students qualified for entry into a nursing program, academic metrics associated with attrition include having lower academic ability, often reflected in low overall grade point average (GPA), more specifically low science GPA, or in a lower Test of Essential Academic Skills (TEAS) score (Bennett, Bormann, Lovan, & Cobb, 2016; Jeffreys, 2012; Noone, 2008; Phillips, Spurling, & Armstrong, 2002; Wolkowitz & Kelley, 2010). Additional factors related to academic success include habits and practices that support good academic performance such as regular attendance, good study habits, and the discipline to invest time in studying for examinations (Jeffreys, 2012).

In addition to academic and related metrics, social determinants may also influence student attrition. Social determinants have been closely linked to health status. According to *Healthy People 2020*, the five key areas of social determinants of health (SDOH) include economic stability, education, social and community context, health and health care, and neighborhood and built environment (Office of Disease Prevention and Health Promotion [ODPH], 2017). For example, economic stability involves financial status and issues around the ability to obtain adequate food and housing. Education relates to experiences in primary, secondary, and higher education as well as language and health literacy. Social and community context involves social support and perceptions of discrimination. Health and health care includes access to health care along with perceptions of health, both mental and physical. Neighborhood and built environment relates to environmental conditions such as air quality and perceptions of safety (ODPH, 2017).

A large body of literature has identified social determinants of health as root causes of a wide variety of health disparities (Braveman, Egerter, & Williams, 2011). Similarly, individual factors reflecting social determinants are often included in academic retention models, such as Jeffreys's (2012) Model of Nursing Undergraduate Retention and Success (NURS) and Swail's (2004) Geometric Model of Student Persistence and Achievement. Social determinants relevant to education can negatively impact an academically capable student from progressing through a nursing program. While a body of research has focused on pedagogical approaches to student success (Abele, Penprase, & Ternes, 2013; Bennett et al., 2016; Newton & Moore, 2009), limited research has explored the association between social determinants and attrition. A better understanding of the multifaceted predictive factors of attrition is needed to inform targeted interventions to promote program progression and maintain an adequate nursing workforce.

Method

Design, setting, and sample

The study had a descriptive, comparative design. A convenience sample was obtained from one upper division baccalaureate nursing program in the Southeast. The single inclusion criterion required participants to be junior prelicensure nursing students in the first semester of the nursing program. Students repeating one or more first semester junior nursing courses were excluded from participating in the study.

Data and instruments

Following Institutional Review Board approval from Mercer University, a study database was created from three major sources. First, an administrative database was accessed to extract student demographics (age, gender, race, and ethnicity), financial status, and academic metrics (overall pre-nursing GPA, science GPA, and TEAS scores). Final course grades were extracted from the institution's learning management system. Lastly, a web-based survey was used to collect multiple indicators including: social factors (student or parents born outside the U.S.; English being the primary language spoken in the home; experiences

of discrimination because of race, ethnicity, gender, and/or sexual orientation); health (mental and physical) and safety (within one's neighborhood) factors; and academic preparation (whether high school preparation for college was adequate). The majority of these survey items were dichotomous (yes / no) items.

Also included in the web-based survey were three additional instruments. Students completed two scales from Jeffreys' battery of instruments measuring retention factors: the Student Perception Appraisal-Revised (SPA-R) to measure factors that restrict or support success within the nursing program and the Educational Requirements Subscale (ERS) to measure students' confidence to accomplish academic tasks specific to nursing school (Jeffreys, 2012). The SPA-R is a 27-item instrument where items are completed on a 5-point Likert scale (1 = severely restricted to 5 = greatly supported). Respondents also had the option to indicate "does not apply". To address how additional factors might restrict or support success, items were added to the SPA-R related to the pace of the nursing program, the amount of reading and math skill required, opportunities for stress reduction, availability of food and housing, physical and mental health of the student and family, and specific program expenses related to electronics, books, and uniforms.

The ERS is a 10-item instrument where students rate their ability to complete academic tasks on a scale from 1 (not confident) to 10 (totally confident). The SPA-R and the ERS have been used in multiple studies of nursing student retention (Jeffreys, 2001; Jeffreys, 2002; Jeffreys, 2007; Jeffreys, 2012). Students also completed the Rosenberg (1989). The Rosenberg Self-Esteem Scale is a 10-item instrument where items are completed on a 4-point Likert scale (1 = strongly disagree to 4 = strongly agree). Respondents indicate the extent to which they agree or disagree with statements about themselves. Higher scores indicate greater self-esteem. The scale has been widely used in clinical and educational research. Cronbach's alpha in this study was 0.88. The survey concluded with two items from the 4-item Perceived Stress Scale (Cohen, Kamarck, & Mermelstein, 1983). These items are completed on a 5-point Likert scale (0 = never to 4 = very often). Table 1 summarizes how the study indicators operationalized demographic, academic, and social determinants relevant to students' academic success.

Table 1
Indicators of demographic, academic, and social determinant factors relevant to education measured in study.

Factors	Indicators
Demographic	Age Gender Race/Ethnicity
Academic	Overall GPA at program entry Science GPA at program entry TEAS score Confidence in ability to complete academic tasks Final grade in each course
Social determinants	
Economic stability	Financial need Ability to purchase books, electronics, and other school-related supplies Ability to purchase food
Education	English primary language High school preparation First generation college student
Social and community context	Born outside the U.S. Parent(s) born outside the U.S. Experiences of discrimination in educational settings Support from family and friends
Health and health care	Self-reported physical health Self-reported mental health Perceived stress Self-esteem
Neighborhood and built environment	Personal safety Availability of housing

Note: TEAS = Test of Essential Academic Skills.

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