REVIEWS

Efficacy of progression testing in predicting nursing student academic success

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Abstract

Objective: The aim of this review is to study the accuracy of commercially available progression examinations in predicting student success to determine if there are significant differences in scores for those who are academically successful and to discuss the implications of the findings in relation to the use of progression policies.

Methods: Research papers published between January 2001 and November 2011 were identified in CINAHL, MEDLINE and Health Source: Academic databases. The search was performed using standardized systematic search methods with the following terms: student success, progression testing, standardized testing, midcurricular, ATI® and HESI®.

Results: Two studies met the inclusion criteria of reporting quantitative relationships between computerized assessment measures and academic success. Both reported that MC-HESI® scores positively correlated with academic success and scores attained in capstone nursing courses and that there were significant differences in scores between those who were and were not successful academically.

Conclusions: The MC-HESI® may be a useful instrument for identifying students who are at risk for not successfully completing the nursing program. The use of information obtained from this test, and other progression testing, can enable faculty to identify at-risk students at an earlier point within the curriculum and assist them by developing a remediation plan for student success through the remainder of their nursing education.

Key words

Benchmarking, Student success, Curriculum, Academic success, Progression testing

1 Introduction

Assisting students to be successful has always had high priority for nursing faculty as attrition is costly to educational programs and students. Faculty members are continually challenged to incorporate creative teaching methods and effective evaluation processes to ensure students are prepared for NCLEX-RN® success and safe entry into practice. One facet of these evaluative processes is the use of progression testing within the curriculum. Progression testing is the use of standardized tests covering specific content areas to measure students' mastery as they progress through required nursing courses [1].

The recruitment of more diverse populations into nursing has resulted in a substantial gap between the NCSBN requirements measured on the NCLEX-RN® and the academic abilities of those who choose nursing [2]. Many at-risk students are unprepared, with poor test-taking skills and a lack of understanding regarding the rigors of nursing school. These qualities make it more difficult for students to be successful academically. Attrition rates support the fact that the academic demands are rigorous. The National League for Nursing Accrediting Commission reported that the graduation rate for associate degree nursing students is currently fifty three percent [3]. Faculties from a number of schools of nursing have reported increasing interest in more accurate methods of early prediction of student success [4]. Identifying at-risk students earlier in the curriculum allows educators time to develop remediation plans that may students to be successful in their nursing courses and eventually on the NCLEX-RN®.

The aim of this review is to study the accuracy of commercially available progression examinations in predicting student success to determine if there are significant differences in scores for those who are academically successful and to discuss the implications of the findings in relation to the use of progression policies.

2 Method of review

A systematic literature search was conducted in the CINAHL, MEDline, and Health Source: Academic databases for studies published in the English language from 2001 through October 2011 using the following search terms in the title, abstract, or keywords: student success, progression testing, standardized testing, midcurricular, ATI® and HESI®. Studies were examined starting with an appraisal of the titles and abstracts to determine if they met inclusion criteria. An ancestry search through the reference list of the studies of interest and a descendancy search with pivotal studies were conducted to identify any further potential studies for review. All studies that met the inclusion criteria were appraised: Information extracted included type of program, sample size, examination administered, and predictive value.

The following were the inclusion criteria:

1) Report relationships between computerized assessment measures and academic success. Studies were excluded from the review if they were conducted for the purpose of predicting NCLEX-RN® success, reported NCLEX-RN® success data as the only outcome measure or described implementation of new curriculum policies.

2) Administered a commercially available examination that is comparable to the NCLEX-RN®, using the same test blueprint and similar computerized features.

3) Present new information not already reported in an earlier source.

3 Findings

The review identified two studies, both were published in CIN: Computers, Informatics, Nursing. Both studies involved samples of associate degree nursing students. Table 1 provides the extracted descriptive information used to evaluate the quality of two studies, including the type of nursing program, sample size, examination administered, and major findings reported.

The only reported relationship is associated with the use of the mid-curricular HESI® exam (MC-HESI®). Harding and colleagues have conducted two studies with associate degree nursing students over consecutive years. In the first study, conducted in 2007-2008, a study aim was to evaluate the relationship between the students' success in the nursing program and score on the MC-HESI® [5]. The score attained on the MC-HESI® correlated with the final grade attained in the last two capstone nursing courses during the final year of study (r = 0.522 and 0.513, $p < 0.001$). All of the students who were

not successful in the nursing program (n = 16) had scores below 800. Students who were not successful had lower MC-HESI examination scores (mean, 743.4; SD, 113.2) than those who were successful (mean, 823.3; SD, 110.7), which held statistical significance (t = 2.532, P = 0.017).

Harding and colleagues (2011) conducted a second study in 2008-2009 with 106 associate degree nursing students in different locations [6]. Again, the score attained on the MC-HESI® correlated with academic success (r = 7.445, P = 0.024) and final grade attained in the last two capstone nursing courses during the final year of study (r = 0.483 and 0.421, p < 0.01). Students who were not successful in the nursing program had lower scores (mean, 796.57; SD, 115.1) (mean, 860.6; SD, 109.1) than those who were successful (mean, 860.6; SD, 109.1), which held statistical significance (t = 2.291, P = 0.024). Logistic regression models correctly identified 85.9% of those who were predicted to be academically successful.

Table 1. The descriptive information

Journal	Program	Sample	Year	Exam	Major Findings
Harding et al. (2011) CIN: Computers, Informatics, Nursing	AND	106	2008-2009	MC-HESI®	MC-HESI® score positively correlated with academic success and scores attained in capstone nursing courses.
Montgomery (2010) CIN: Computers, Informatics, Nursing	AND	68	2007-2008	MC-HESI®	MC-HESI® score positively correlated with academic success and scores attained in capstone nursing courses. All students who were not successful (n = 16) had MC-HESI® scores below 800.

4 Discussion

Currently, very little information exists within the literature regarding progression testing at specific target points throughout the curriculum and how this testing influences successful completion of the nursing program. Most literature related to progression or standardized testing focused upon the end of the curriculum and preparation for NCLEX-RN® success.

Given that very little has been published regarding the ability of progression testing as a means to predict individual student academic success, these is an identified need for further research to assess the use of testing in identifying at-risk students and how testing may influence student outcomes. It may be beneficial to consider the relationships among all progression tests given throughout the curriculum, particularly as it pertains to the development and implementation of student progression policies. Further study is needed to determine if the score on a particular examination, including the MC-HESI®, should be tied to advancement.

The MC-HESI® appears to have significant predictive ability. The MC-HESI® score has positively correlated with scores attained in capstone nursing courses and the chance of a student's successful completion of the nursing program. The MC-HESI® uses a predictability model to compare individual students with those throughout the United States. It is a customized 50-, 75-, or 100-item exam based on the core curriculum and is designed to evaluate the student's mastery of content contained in the first half of the nursing curriculum. Faculty designate the point within the curriculum the MC-HESI® is administered [7].

The MC-HESI® may be a useful instrument for identifying students who are at risk for not successfully completing the nursing program. The use of information obtained from this test, and other progression testing, can enable faculty to identify at-risk students at an earlier point within the curriculum and assist them by developing a remediation plan for student success through the remainder of their nursing education.

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