Research letter

Prior degree status of student pharmacists: Is there an association with first-year pharmacy school academic performance?

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Abstract

Objective: To examine whether prior degree status during pharmacy school is associated with first-year academic success, as measured by first-year pharmacy school grade point average (GPA).
Methods: Baseline data including pre-pharmacy GPA, Pharmacy College Admission Test (PCAT) score, prior degree status, and end of first-year pharmacy school GPA were collected for 118 first-year student pharmacists.
Results: Sixty-three students (53.4%) had earned a degree prior to pharmacy school. After pre-pharmacy GPA, prior degree status was the second strongest predictor of first-year pharmacy school GPA ($\beta = 0.23$, $p = 0.009$). Those with a prior degree attained a higher mean first-year pharmacy school GPA compared to those without (3.04 vs. 2.81, $p = 0.03$).
Conclusion: Our findings suggest an association between prior degree and higher first-year pharmacy school GPA. This finding may be relevant to pharmacy school admission committees.
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Introduction

Colleges and schools of pharmacy are charged with attracting the best students and helping them develop the knowledge and skill sets to become exceptional pharmacy practitioners. Therefore, it is important for pharmacy schools to enroll students who can succeed in the curriculum and then provide the necessary aid and support to ensure optimal opportunities for success. However, admissions officers still struggle with determining what criteria are best for making admissions decisions.

Academic performance in the first-year of pharmacy school is often used as a measure of student success as it demonstrates how well a student has made the transition from the pre-pharmacy curriculum to the more demanding rigors of the professional pharmacy curriculum. In the current study, we examine a lesser-studied predictor of first-year academic success, the association of prior degree status, on first-year pharmacy school academic success (as defined by GPA).

Pre-pharmacy GPA, PCAT, and degree status as predictors of academic success

The majority of colleges and schools of pharmacy use an applicant's pre-pharmacy GPA and PCAT scores as a component of their admissions criteria. Virtually all schools also require submission of an essay or statement of purpose, letters of recommendation, and participation in an interview process. It is still debatable, however, what best indicates the likelihood of future academic success in pharmacy

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school. To answer these questions, many investigators have examined the effectiveness of pre-pharmacy GPA, PCAT, and other factors in predicting a student's success in the pharmacy curriculum.[1–27]

Meagher et al.[1] have provided a comprehensive review of the available literature on pre-pharmacy GPAs and PCAT scores as predictors of first-year academic performance in pharmacy school. Most studies have concluded that both pre-pharmacy GPA and PCAT scores are positive predictors of first-year pharmacy GPA. Additionally, a meta-analysis of the existing data on PCAT and pre-pharmacy GPA correlation with pharmacy school GPA was conducted by Kuncel et al.[2] and found that cumulative PCAT scores and pre-pharmacy GPAs were both correlated with first-year pharmacy GPA ($r = 0.45$ for both). Only one study, by Kidd and Latif,[3] failed to find any correlation between pre-pharmacy GPA and first-year performance. Chisholm et al.[4,5] and Houglum et al.[6] did not find a student's cumulative pre-pharmacy GPA to be a predictor of first-year academic success, but they did find that a student's math/science GPA was a good predictor. Other studies have found that a student's math or science GPA taken alone was just as much a predictor of success as the student's cumulative GPA.[7,8] Overall, pre-pharmacy GPA has correlated with first-year pharmacy GPA ($r = 0.30$–0.66) and has been found to explain up to 41% of the variance in pharmacy school GPA.[4] Composite PCAT scores have been found to explain anywhere from 10% to 35% of variance in first-year academic performance in pharmacy school.[1]

Fewer studies are available that examined whether or not a prior degree is correlated with first-year pharmacy GPA.[4–6,23–27] Most of these studies found that the attainment of a four-year degree was a significant predictor of academic success in pharmacy school.[4,6,26,27] Chisholm et al.[5] found that students with a prior four-year degree were more likely to achieve a GPA above the 25th percentile at the end of the first year of pharmacy school compared to those without a degree. McCall et al.[23] found that the type of degree was an important consideration in predicting first-year GPA. They found that students with a bachelor of science degree had significantly higher first-year GPAs than did those students without a degree or those students that had a bachelor of arts or master's degree. They also found that the number of advanced biology courses completed prior to pharmacy school was a predictor of first-year academic success. In contrast, Thomas and Draugalis[24] did not find the attainment of a four-year degree to be a significant predictor of academic performance as measured by first-year professional cumulative GPA.

In this study, our objective is to examine the influence of prior degree status (bachelor's degree and above) as a possible predictor of first-year academic success, as measured by a student's first-year GPA. Our hypothesis is that possessing a prior degree before entry to pharmacy school will be associated with a higher first-year pharmacy school GPA. If this hypothesis is proven true, prior degree attainment would be worthy of favorable consideration by admissions committees as they review applicants' information. While studies have examined the impact a prior degree might have on a student's first-year pharmacy school GPA, data is conflicting from those studies, and some of those studies limited their examination to bachelor's level degrees only.

Methods

This study was reviewed and approved by the institution's Institutional Review Board. A convenience sample of first-year student pharmacists at one public College of Pharmacy who entered pharmacy school in Fall 2010 was employed in the current study. Composite PCAT scores, pre-pharmacy GPAs, prior degree status, and end of first-year pharmacy school GPAs were collected for all participants through extraction of students' admissions data.

Variables

The outcome, or dependent variable, for this study was the student's GPA at the end of the first professional year. The independent variables included in the analyses were pre-pharmacy GPA, PCAT, and prior degree status upon program entry. The pre-pharmacy GPA is the student's cumulative GPA of all coursework completed prior to matriculation at pharmacy school. PCAT is the student's highest composite percentile rank submitted at the time of application. Prior degree status is whether or not the student had a degree (bachelor's degree and beyond) at the time of matriculation.

Statistical analysis

All of the analyses were performed using SASv9.2. Descriptive statistics, including means and standard deviations, were generated to describe the population under study. Univariate tests, simple Pearson's correlations, and two sample t-tests were applied to assess unadjusted relationships between GPAs and PCAT scores. Finally, a multivariable linear regression model was applied to test the association between several covariates of interest and pharmacy school GPA. All associations were considered significant at the alpha level of 0.05.

Results

One hundred twenty students were included in the original convenience sample. Two students withdrew from the College for nonacademic reasons during their first semester of pharmacy school and therefore were excluded from the current analyses (final $n = 118$ students).

The mean, standard deviation, and range of PCAT score and pre-pharmacy GPA are presented in Table 1. Pre-pharmacy GPA and composite PCAT scores of the students were analyzed for correlation with first-year pharmacy