



Short Communication

A comparison of pharmacy technician experience, degree and major as predictors of academic performance between two racial groups at a historically black university

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Abstract

Objective: To compare the value of previous pharmacy technician experience, degree, and major as predictors of academic performance between African-American and non-African-American students at the University of Maryland Eastern Shore School of Pharmacy (UMES-SOP).

Methods: Statistical analyses were conducted on the retrospective data of 201 students at UMES-SOP. The didactic assessment and experiential scores were used as measures of academic performance.

Results: Significant positive correlations were observed between: (1) type of major and first year (P1) didactic performance for African-American students and (2) prior pharmacy technician experience and both P1 and second year (P2) didactic performance for non-African-American students. Further, the models for the combination of all independent variables on P1 didactic performance showed significance for African-American students.

Conclusion: The combination of prior pharmacy experience, degree, and type of major was a significant predictor of P1 didactic performance in African-American pharmacy students.

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Introduction

Several reports have indicated that providers who were exposed to a diverse population of peers were more likely to serve underrepresented populations.^{1–3} Additionally, the concordance of a patient's racial/ethnic background and that of the provider has been shown to result in more

positive clinical outcomes and higher perceived quality and use of health care.⁴ However, despite an increase in underrepresented minority groups in the general US population, the racial demographics of the pharmacy workforce have not significantly changed since 2000.^{5,6} Realizing the importance of this issue, the American Society of Health-Systems Pharmacy (ASHP) created a task force to address demographic disparities within the pharmacy profession.⁷ Although the student body at pharmacy school has changed significantly, there is still much progress to be made in the area of diversity and inclusion.⁸ As more schools of pharmacy attempt to increase enrollment of African-

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Americans in particular, it is important to identify factors most likely to predict academic success in this population. In pharmacy school, this is an aspect of admissions where limited data exist. Earlier studies have correlated traditional admissions criteria, such as the standardized Pharmacy College Admission Test (PCAT) scores and the pre-pharmacy grade point average (GPA), with academic success of either African-American students or of minority students.^{9–11} A retrospective analysis of pharmacy students enrolled in an eastern university from 1975 to 1986 indicated that pre-pharmacy GPAs and PCAT reading scores were the best predictors of first year pharmacy GPA for African-American students.⁹ Charupatanapong expanded the student population by including other minority students, i.e., Asian, Hispanic, and Native American, and has shown that pre-pharmacy GPAs and PCAT quantitative scores were predictors of minority pharmacy students' cumulative GPA.¹⁰ A study conducted in a four-year pharmacy program at a Historically Black Colleges and Universities (HBCU) institution indicated that pre-pharmacy GPA, PCAT chemistry and quantitative scores, and prior degree were significant predictors of the students' academic success. Although the latter study did not specifically analyze by race, a majority (66%) of the student population was Black or African-American.¹¹

However, pharmacy is still faced with the challenges of increasing African-American student enrollment. In fact, the number of African-American students enrolled in US colleges and schools of pharmacy is considerably lower than their representation in the general US population.¹² In 2013, African-American students accounted for only 7% of students enrolled in the doctor of pharmacy (PharmD) programs.¹³ Some of the challenges include lower performance on admission tests, an over reliance on standardized testing in the admissions process, and an inadequate science education.¹² It has been shown that African-American students generally perform more poorly on standardized tests compared to their White counterparts.^{14–17} Carrol reported that non-Caucasian students (African-American, Asian, Hispanics, Mid-Eastern, and Native American) scored lower on PCAT verbal and reading subtests, but no differences in the students' final course grades were observed across groups.¹⁸ In medical education, a recent study has shown that Medical College Admission Test (MCAT) scores did not predict performance of minority students in the first year of medical school.¹⁹ Additionally, a comprehensive review of the MCAT showed that Black examinees had lower average MCAT scores than White examinees.²⁰ However, the Black examinees subsequently performed adequately on selected medical school performance indicators suggesting that they were selected on the basis of a combination of attributes and competencies rather than on MCAT scores alone.²⁰ Findings from a national study indicated that health professions schools reported an overall positive impact from the use of a holistic admissions review. The majority of these schools reported an increase

in diversity, while measures of student success were largely unchanged, or, in many cases, improved. The schools' approach not only included traditional measures of academic achievement such as the applicant's grades and test scores, but also assessed an applicant's unique experiences and attributes.²¹

Of particular interest to this investigation that has not been studied in the African-American student population is the predictive value of prior pharmacy technician experience. Results from pharmacy programs regarding prior pharmacy work experience have been contradictory. A study reported that prior clinical pharmacy work experience predicted higher third year (P3) experiential GPAs.²² However, Mar et al.²³ indicated that prior pharmacy work experience did not affect the students' overall clinical or academic performance in pharmacy school. Another criterion that is of interest is the effect of prior degree. A study in a historically Black pharmacy program has shown that students with prior degrees performed better during the first year of pharmacy school.¹¹ Previous studies in non-HBCU pharmacy programs have also correlated prior degree with academic performance.^{24–27} For instance, a prior four-year college degree predicted first year academic success in a study by Chisholm but not in a study by Thomas.^{24,28} More specifically, there was a significant positive correlation between prior science baccalaureate (BS) degree and first year academic performance.²⁵ A related study conducted in a three-year pharmacy program reported that a Bachelor's degree in the Applied, Health or Physical science was a predictor of the first year and second year academic success.²⁷ It is important to note that none of the above-mentioned studies specifically analyzed the African-American student population.

Prior pharmacy experience, degree, and major, are not specific requirements for admission at UMES-SOP. However, these are often viewed favorably by interviewers in the overall assessment of an applicant during the campus interview. For the traditional admissions criteria, preliminary results showed that PCAT scores and pre-pharmacy GPAs have weak positive correlations with the African-American students' didactic performance, but did not correlate with experiential performance (data not shown). UMES-SOP is an HBCU institution, as well as an 1890 Historically Black Land-Grant University. Additionally, UMES-SOP has a concentrated three-year pharmacy program that uses a mastery-learning model and a block system of curricular design. In this educational model, material is taught in one block (typically lasting two weeks) and the student's understanding is evaluated by a summative assessment before progressing to the next block. The biweekly summative assessments occur at the end of each block and the students are required to achieve an 85% or better in order to demonstrate mastery of the content. This didactic component of the curriculum occurs in the first two years of pharmacy school. The experiential component immediately begins in the first year, is distributed throughout the

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