

Correlation and Predictability of Science Prerequisites and GPA/PANCE Scores Among Five Cohorts of Physician Assistant Students

Jason C. Gifford*, Randi D. Haun*, Richard D. Muma

Department of Physician Assistant - College of Health Professions

Abstract. The primary purpose of this study was to determine whether a correlation existed or a prediction could be made regarding PA graduates who had taken advanced undergraduate science coursework along with the required science prerequisites, and those that had not, and subsequent performance in the WSU PA program and on the PANCE. The hypothesis being that those who completed these advanced courses would have better problem solving abilities and better performance in the Program and on the PANCE. Study data was collected on 208 PA Program graduates from 2003-2007 who had taken the PANCE. The explanatory variables included graduating program GPA, PANCE scores, and completion (or not) of organic chemistry and/or biochemistry undergraduate course work. The sample was divided into two groups categorizing them based on completion of the standard prerequisites or the standard prerequisites plus organic and/or biochemistry. Point-biserial Pearson correlation=no correlation between GPA and PANCE by group. Linear regression=no predictability of GPA or PANCE scores. Advanced courses (beyond standard prerequisites) were not correlated or predictive of PA program performance or PANCE scores.

1. Introduction

Many would agree that a solid undergraduate background in the basic sciences is required for physician assistant students to perform well in their program of study.[1] As physician assistant (PA) programs have moved to the graduate level, there is a renewed interest in evaluating the prerequisites. PA program prerequisites across the country are not standardized and vary from program to program, but they likely include two courses in human anatomy and human physiology, one course in general biology, one course in microbiology, two courses in chemistry, and one course in statistics.[1] The decision to accept a student into a PA program presents a major challenge to selection committees. Understanding which prerequisites are best for student success would be helpful.

The science paradigm has been assumed as the most appropriate way to prepare students for meticulous medical education.[2] For this reason, a modification of required prerequisites to include organic chemistry, biochemistry, or both courses is under consideration at many PA programs across the country.

2. Experiment, Results, Discussion, and Significance

This cross-sectional study was undertaken at Wichita State University in Wichita, Kansas. Study data was collected and analyzed on 208 PA program graduates from 2003-2007 who had taken the Physician Assistant National Certifying Exam (PANCE). 2003 was the first year that the National Commission on Certification of Physician Assistants (NCCPA) data was made available by individual student names, making it possible to match individual scores with their specific undergraduate science coursework and graduate program GPA. PANCE scores used represented first time test administration only.

The sample was divided into two groups. Group one included students who completed the typical science prerequisites currently required by the WSU PA program (noted above). Group two included students who completed the above and an additional course in organic chemistry and/or biochemistry. Correlation analysis was conducted for both groups comparing program graduate GPA and PANCE scores using linear models to see how the scores relate. Statistics used included stem and leaf plots, *t*-tests, point-biserial correlation, and bivariate linear regression.

Descriptive statistics demonstrated similar results between prerequisite groups for PANCE and GPA. There was no significant difference in means between the two groups as determined by independent samples *t*-test. A point-

biserial Pearson correlation comparison of student scores on the PANCE (measured by the reported score) to groups 1 and 2 showed no statistically significant relationship. Likewise, no statistically significant relationship was seen in the comparison of student GPA to groups 1 and 2. (Table 1)

Table 1. Point-Biserial Pearson Correlation

CLASSES 2003-2007	PANCE	GPA
GROUP 1 and 2	0.039*	0.009*

Group 1 = Standard Prerequisites; Group 2 = Organic/Biochemistry

*Not significant

Linear regression of PANCE and GPA with prerequisite groupings revealed no significant findings. As is outlined in table 2, only 0.2% of the variance in the PANCE scores could be accounted for between prerequisite groups and 0% of the variance in GPA could be accounted for between prerequisite groups.

Table 2. Linear Regression of Prerequisites (Standard or Organic/Biochemistry) and PANCE Scores and GPA

	R	R Square	Adj. R Square	Std. Error of the Estimate
PANCE	0.039	0.002	-0.003	106.334*
GPA	0.009	0.000	-0.005	.255886*

* Not significant

The results of this study demonstrated advanced courses (beyond standard prerequisites) were not correlated or predictive of PA program performance or PANCE scores. However, upon interpretation of this data, it must be noted that this was a small sample size and results can not be generalized beyond Wichita State University.

3. Conclusions

This study demonstrated that advanced undergraduate science coursework in organic chemistry and/or biochemistry by Wichita State University physician assistant students from the classes of 2003 to 2007 was not correlated or predictive of performance on the PANCE or graduate program GPA. The prerequisite groups accounted for 0.2 % of the variability on the PANCE and 0 % of the variability for GPA. Therefore, at this time, requiring advanced undergraduate science coursework in organic chemistry and/or biochemistry as admission requirements to the WSU physician assistant program would not prove beneficial to improving program GPAs and performance on the PANCE.

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