RESEARCH BRIEF

The Predictive Strength of the Physician Assistant College Admissions Test (PA-CAT) Scores to 2023 Cohort Complete Didactic Performance at Miami-Dade College Physician Assistant Program

Miami-Dade College: Class of 2023 Report
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(1) Miami-Dade College

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**Miami Dade College Physician Assistant Program
Medical Campus
950 NW 20th Street
Miami, FL 33127**

Mission:
The mission of the Miami Dade Physician Assistant Program is to educate and train students from a culturally diverse background to become competent primary care physician assistants who will serve the medically underserved patients in urban and rural communities in Florida. The program also promotes academic excellence, high professional standards, and the development of lifelong learners.

Director: Avril Nimblett-Clarke, DMSc, MS, PA-C

Dr. Nimblett-Clarke serves as the Program Director and Chairperson of the Physician Assistant program. She holds a Bachelor of Science degree in Physician Assistant Studies from Howard University and a Master and Doctoral degree in Educational Leadership from A.T. Still University. She has more than 20 years of clinical experience as a Certified Physician Assistant. Her primary clinical practice area is general pediatrics, adolescent medicine, and Sickle Cell Disease research. In addition, she has served as Assistant Professor and Academic Coordinator at various programs. On a national level, she has served as a facilitator for the Physician Assistant Education Association (PAEA) New Faculty Skill Workshop, through which she has mentored new faculty. She is also a member of the PAEA leadership committee, where she continues to contribute to a platform of building excellence in leadership among Physician Assistant faculty. Dr. Nimblett-Clarke is passionate about student success and is committed to growing a community of servant leaders. Dr. Nimblett-Clarke's Capstone project was titled "Classroom Assessment Techniques in Physician Assistant Education: Improving Learning Gains". She was awarded the 2021 Capstone Award of Excellence from A.T. Still University.

Scott Massey, PhD, PA-C

With over three decades of experience in PA education, Dr. Scott Massey is a recognized authority in the field. He has demonstrated his expertise as a program director at esteemed institutions such as Central Michigan University and as the research chair in the Department of PA Studies at the University of Pittsburgh. Dr. Massey's influence spans beyond practical experience, as he has significantly contributed to accreditation, assessment, and student success. His innovative methodologies have guided numerous PA programs to ARC-PA accreditation and improved program outcomes. His predictive statistical risk modeling has enabled schools to anticipate student results. Dr Massey has published articles related to predictive modeling and educational outcomes. Doctor Massey also has conducted longitudinal research in stress among graduate Health Science students. His commitment to advancing the PA field is evident through participation in PAEA committees, councils, and educational initiatives.

Rajat Chadha, PhD

Dr. Rajat Chadha, with a PhD in Education from Indiana University, Bloomington, is an expert psychometrician with more than thirteen years of extensive experience working on multiple significant projects. Dr. Chadha has worked as a psychometrician in high-stakes certification for physicians in the United States. He has also worked on predictive risk modeling for Physician Assistant programs and has published book chapters and peer-reviewed articles in top-tier journals.

Additional Information

For questions about the research brief, access to the full research study, or to express interest in participating in future research studies, reach out to:

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Research Brief: The Predictive Strength of the Physician Assistant College Admissions Test (PA-CAT) Scores to 2023 Cohort Complete Didactic Performance at Miami-Dade College Physician Assistant Program

Abstract

The current research study investigated the relationship between the PA-CAT exam scores and performance during the didactic year of the incoming class (n=53) of the 2023 cohort at Miami-Dade College Physician Assistant program.

Results indicate that the PA-CAT Composite score has a statistically significant (p<.05) positive correlation with performance in two Physical Diagnosis courses; one Clinical Anatomy and Physiology course; one Clinical Diagnostic Imaging course; Clinical Medicine I; Pathophysiological Basis of Disease I; Electrocardiography; Pharmacology I; Pharmacotherapeutics; Clinical Pharmacotherapeutics; first-semester GPA; second-semester GPA; Combined Cumulative GPA; and the didactic Physician Assistant Clinical Knowledge Rating and Assessment Tool (PACKRAT).

Physician Assistant College Admissions Test (PA-CAT)

The PA-CAT is a 240-item specialized, discipline-specific assessment that is designed to measure knowledge and application in nine prerequisite science subjects necessary for success in the demanding Physician Assistant (PA) curriculum. The PA-CAT has been developed specifically for use by PA educators and their admissions departments as part of a holistic admissions process. As of June 21, 2023, the assessment has been administered to 2,979 examinees since it was first administered on May 1, 2020. One Composite scaled score based on all items comprising the assessment and three subject scaled scores (Anatomy & Physiology, Biology, and Chemistry) are reported for each examinee. The reliability of PA-CAT Composite scaled scores is very high (0.937), indicating that the PA-CAT Composite scaled scores are very dependable. This means that it is highly likely that the PA-CAT examinees with higher PA-CAT scaled scores have higher knowledge and application skills in the prerequisite science subjects.

Relationship between PA-CAT Composite Scores and Performance in Physician Assistant Program

The relationship between PA-CAT Composite scores and performance in the PA program at Miami-Dade College was investigated by calculating the Pearson correlation coefficient and the associated statistical significance. These are discussed next along with the interpretation of the strength of the relationship in terms of the size of the correlation coefficient.

Correlation Coefficient

Correlation coefficient quantifies the degree of relationship between two variables. Its value can range from -1 to +1. A positive value implies that when one variable increases, the other tends to increase, as well. A negative value implies that when one variable increases, the other tends to decrease. A value of 0 implies that there is no discernible linear relationship between the variables.

The knowledge of the relationship between two variables can be useful in predicting one from the other, especially if one variable is observed in advance of the other. At Miami-Dade College, PA-CAT Composite scores have a positive correlation with performance in multiple didactic courses, didactic PACKRAT scores, first semester GPA, second semester GPA, and combined cumulative GPA at the end of second semester. Students with higher PA-CAT Composite scores are expected to do better in these compared to students with lower PA-CAT Composite scores.

Statistical Significance

Statistical significance is determined using the p value, the probability of observing a correlation coefficient by chance if the actual coefficient is 0. For example, if the p value associated with a correlation coefficient is 0.082, the probability of observing this or a higher absolute correlation coefficient by chance is 8.2% (8.2/100 = 0.082), given that the actual coefficient is 0. A correlation coefficient is statistically significant if the p value is lower than the probability that the decision makers consider too low to be by chance only. This threshold value is referred to as significance level or alpha. One of the most common conventional alpha values used in educational settings is 0.05, also referred to as 5% significance level. When more conservative decision making is desired a lower alpha value of 0.01 (1% significance level) is used.

The correlation of PA-CAT Composite scores with performance in the PA program are statistically significant at the 5% significance level for several variables.

Size of the Correlation Coefficient

The higher the absolute correlation coefficient, the stronger the relationship between two variables and the better the prediction of one variable from another. There are general guidelines on the interpretation of the strength of relationships (Cohen, 1988; Cohen, 1992) in terms of the size of correlation coefficient. A correlation coefficient of around 0.100 is considered small, 0.300 is considered medium, and 0.500 or greater is considered large.

Correlation coefficients between PA-CAT Composite scores and PA program performance variables, *p*-values associated with the coefficients, and the interpretation of the size of the relationship are reported in Table 1. Correlation coefficients that were not statistically significant at the 5% significance level are not presented in this report for brevity.

The size of the correlation coefficient of PA-CAT Composite scores with Clinical Anatomy and Physiology at Miami-Dade College is large. In other words, PA-CAT Composite scores are very useful in the predicting performance of applicants in this course. The size of the correlation coefficient of PA-CAT Composite scores with Clinical Diagnostic Imaging is medium. PA-CAT Composite scores are useful in predicting the performance of applicants in this course. The relative usefulness of PA-CAT Composite scores in predicting Clinical Anatomy and Physiology is higher than the usefulness of predicting the performance in Clinical Diagnostic Imaging. Other correlation coefficients in the table can be interpreted similarly.

The scatter plots showing the relationship between PA-CAT Composite scores and the PA program performance variables are presented in Appendix A.

Table 1: Correlation between PA-CAT Composite Scores and PA Program Performance

	Correlation with PA-CAT Composite scores	p value	Statistically Significant (5% level)?	Size of the Correlation Coefficient
PAS 1800C: Physical Diagnosis I	0.471	p < 0.001	Yes	Medium
PAS 1803: Clinical Anatomy and Physiology	0.584	P < 0.001	Yes	Large
PAS 1831: Clinical Diagnostic Imaging	0.424	p = 0.002	Yes	Medium
PAS 1801C: Physical Diagnosis II	0.344	p = 0.012	Yes	Medium
PAS 1811C: Clinical Medicine I	0.304	p = 0.027	Yes	Medium
PAS 1813: Pathophysiological Basis of Disease I	0.339	p = 0.013	Yes	Medium
PAS 1822L: Electrocardiography	0.318	p = 0.020	Yes	Medium
PAS 1823: Pharmacology I	0.308	p = 0.025	Yes	Medium
PAS 3075: Pharmacotherapeutics	0.297	p = 0.031	Yes	Medium
PAS 3070: Clinical Pharmacotherapeutics	0.281	p = 0.042	Yes	Medium
Semester 1 GPA	0.458	p < 0.001	Yes	Medium
Semester 2 GPA	0.384	p = 0.005	Yes	Medium
Combined Cumulative GPA	0.420	p = 0.002	Yes	Medium
PACKRAT I	0.338	p = 0.013	Yes	Medium

Limitations

A limitation of this research study is that the findings are based on a small sample (n=53) from a single cohort at one PA program and may not be generalizable to other cohorts at the same institution or to other PA programs.