Medical Education with 3-Year Regional Campuses: Do They Attract a Different Type of Applicant?

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ABSTRACT

Background: In response to calls to increase class sizes, the Medical College of Wisconsin (MCW) opened two new 3-year community-based regional campuses in 2016 and 2017. The goal of this study was to analyze whether the applicants and accepted student pools differed for the school's 3-year and 4-year campuses.

Methods: Deidentified data from Wisconsin applicants to MCW for the class enrolling in 2017 were categorized based on their preference for the Milwaukee or a regional campus. Applicants and admitted student data were compared on Medical College Admissions Test (MCAT) score, undergraduate school grade point average (GPA), sex, age, research intensity of their undergraduate school (Carnegie 1 classification vs all others) and Wisconsin county of residency.

Results: Regional campus applicants were significantly older (24.6 vs 23.7, $P = 0.023$), more likely to reside in nonurban counties (33% vs 13%, $P < 0.001$), attend nonresearch-intense undergraduate schools (65% vs 44%, $P < 0.001$) and had lower mean MCAT scores (d=0.77, $P < .001$) than applicants to the Milwaukee campus. Regression models indicated 4 applicant qualities were associated with a preference for 4-year (values >1.0) or 3-year (values <1.0) campus: graduation from a Carnegie 1 undergraduate school (OR = 1.626; 95% CI, 1.01 - 2.62), a higher age at the time of application (OR = 1.092; 95% CI, 1.01 - 1.18), total MCAT score (OR = 0.916; 95% CI, 0.89 - 0.95), and permanent residence in a rural Wisconsin county (OR = 0.349; 95% CI, 0.21 - 0.59). When we examined students who were accepted and matriculated as opposed to just applicants, regression models showed that students with higher ages were more likely to attend the 4-year campus (OR = 1.42; 95% CI, 1.15 - 1.76), while a higher total MCAT score (OR = 0.83; 95% CI, 0.76 - 0.91) and rural county residency (OR = 0.27; 95% CI, .1 - 0.73) were associated with matriculation to the 3-year regional campuses.

Conclusions: These results indicate that the regional 3-year campus model is attracting and selecting students with some differences from those at MCW's 4-year campus. After adjusting for other characteristics, students matriculating to the regional 3-year campuses are nearly 4 times more likely to come from a rural county and have slightly higher MCAT scores.

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INTRODUCTION

In 2015 and 2016 the Medical College of Wisconsin (MCW) opened 2 new regional campuses in Green Bay and Wausau, Wisconsin. The expanded size of the medical school class at MCW was consistent with calls from the Association of American Medical Colleges to increase class sizes by 30% in order to address anticipated shortages in physicians in the coming decades.[1] More importantly, the Wisconsin Hospital Association published a study in 2011 forecasting that Wisconsin would suffer a significant shortfall in future physician supplies and that this deficiency would be most acute in the northern half of the state.[2] These findings were confirmed in additional analyses 5 years later by the Wisconsin Council on Medical Education and Workforce.[3] MCW chose a strategy of opening new regional campuses in areas with the greatest projected shortages, with an aim to recruit different types of students who would be more likely to choose residency programs in these areas for the next phase of their training and then remain in the state's less-populated regions and choose specialties needed in these areas.

In addition to locating these campuses in regions of the state where an a increased need for physicians in future years is anticipated, the campus curriculum was modified so that by starting 6 weeks earlier than the Milwaukee campus and doing clinical rotations over summer months, motivated students could complete their medical training in 3 years rather than the customary 4 years. This adaptation was implemented to allow students

interested in careers in primary care and psychiatry—two areas of high needs in the central and northern portions of Wisconsin—to graduate with less debt and accelerate their entry into residency and the workforce.

Development of these new campuses required a sufficient number of prospective medical students from Wisconsin who would be interested in attending medical school in an environment not intimately linked to a tertiary-quaternary care academic medical center. Even more important was to recruit students who were from smaller cities and rural areas, since previous research has reported that students with rural backgrounds are more likely to choose specialties and practice sites in smaller towns.[4-6] When MCW chose to establish these new campuses, the University of Wisconsin School of Medicine and Public Health already had established a program—the Wisconsin Academy for Rural Medicine (WARM)—that offered students the opportunity to perform their clinical years in smaller communities in central and northeastern Wisconsin. The WARM program enrolls 25 students a year who spend their final 2 clinical years of training either in Green Bay, Marshfield, or smaller communities. Given that this program was already recruiting students from rural areas of the state, it was unclear if there was a sufficient number of additional qualified students to justify the construction of two new regional medical school campuses. Based on application data from previous MCW classes in Milwaukee, there were several well-qualified Wisconsin residents who were denied admission to MCW simply because there were not enough spaces available in the class, but that alone did not assure that these students would be the right individuals for the 3-year regional campus model.

This report reviews MCW's experience in the admissions process for students to the regional campuses in Green Bay and Wausau in 2017. Based on applicants from Wisconsin who wished to be considered for either of the regional campuses, Milwaukee campus, or both campuses, the report examines differences in the applicant pool to determine whether the regional campuses are attracting a different type of student who may be more likely to locate their future practice in nonurban areas of the state or if applicants to the regional campuses are no different than those who currently apply and attend medical school in Milwaukee but are simply motivated to finish a year earlier.

METHODS

Subjects

Data from the application pool of candidates to MCW for the class enrolling in 2017 were deidentified and aggregated. During the application phase for medical school, applicants to MCW could indicate whether they were interested in applying only to the Milwaukee campus, only to Green Bay, or to both campuses. Applicants who submitted an application to both campuses also were asked to indicate which campus they preferred. To help students with this choice, links on the application website were provided so that students could learn more about the mission of each campus and the curriculum. Aspiring students were required to complete a secondary application that included a 1-question (for Milwaukee) or 3-question (for regional campuses) essay on why they were interested in each campus. The application fee was the same regardless of the campus or number of campuses on the application.

Applicants were categorized by whether prospective students indicated on their application that they were only interested in the Milwaukee campus or preferred that campus (Milwaukee campus preferred) or if they were only interested in or preferred a regional campus (regional campus preferred). Because the regional campuses indicated to applicants that preference would be given to Wisconsin residents, only applicants from Wisconsin were considered for this study.

Measures

Characteristics of the applicants were included in data extracted from the student's American Medical College Application Service (AMCAS), which serves as a single application vehicle for all allopathic medical schools in the United States. Applicant age was defined as the age of the prospective student on January 1 in the year they applied. Undergraduate school attended was categorized based on the research intensity of the college the student graduated from based on the Carnegie categories; undergraduate schools were defined as either Carnegie 1 institutions (the highest level of research intensity) or non-Carnegie 1. The student's county of residence was defined as urban or nonurban based on the 2013 Rural-Urban Continuum Codes developed by the United States Department of Agriculture.[7] The student's cumulative grade point average (GPA) and Medical College Admission Test (MCAT) score were taken from the self-reported figures provided on the AMCAS application.

The total number of applicants refers to applicants who forwarded their AMCAS application to MCW before the deadline for application and completed the secondary application, which includes submitting their application fee. Matriculated students refers to applicants who accepted an admission offer to MCW and were present on the first day of classes.

Analyses

Bivariate analyses were conducted using Student *t*-test with Cohen's d effect size, Pearson chi-square, and logistic regression modeling with IBM® SPSS® 24.0.

Human Subject Approval

This research was approved by MCW's Institutional Review Board.

RESULTS

The desired class sizes for Milwaukee and regional campuses were set at 204 and 25 at each regional campus, respectively, for the

Table 1. Applicant Characteristics With Preference for 3-Year Regional vs 4-Year Milwaukee Campus

	Milwaukee Preferred (N=647)	Regional Preferred (N= 108)	*P*-value
Male sex	340 (53%)	47 (44%)	0.082
Residence of urban county	549 (87%)	70 (67%)	<0.001
Carnegie 1 college graduate	364 (56%)	38 (35%)	<0.001
Total MCAT (Mean, SD)	507.52 (7.41)	501.55 (7.12)	<0.001
Cumulative GPA (Mean, SD)	3.65 (0.27)	3.60 (0.29)	0.080
Age (Mean, SD)	23.7 (2.7)	24.6 (3.9)	0.023

Abbreviations: MCAT, Medical College Admissions Test; GPA, grade point average.

Table 2. Accepted Student Characteristics of Those Admitted at 3-Year Regional vs 4-Year Milwaukee Campus

	Milwaukee Preferred (N=102)	Regional Preferred (N= 41)	*P*-value
Male sex	55 (53%)	18 (41%)	0.165
Residence of urban county	86 (84%)	29 (71%)	0.064
Carnegie 1 college graduate	53 (52%)	19 (43%)	0.358
Total MCAT (Mean, SD)	510.14 (5.42)	506.00 (4.45)	< 0.001
Cumulative GPA (Mean, SD)	3.76 (0.20)	3.67 (0.23)	0.020
Age (Mean, SD)	23.0 (1.9)	24.3 (2.8)	0.011

Abbreviations: MCAT, Medical College Admissions Test; GPA, grade point average.

Table 3. Multivariate Results Assessing Contributions to Student Factors Among Applicants and Matriculating Students for MCW-Milwaukee vs Regional Campuses

Variables	OR	95% CI	*P*-value
Applicant Multivariate Model[a]			
Carnegie 1 college graduate			
Regional campus (comparison)	1	—	0.047
Milwaukee campus	1.626	1.006 - 2.626	
Age			
Regional campus (comparison)	1	—	0.022
Milwaukee campus	1.092	1.013 - 1.178	
Total MCAT			
Regional campus (comparison)	1	—	<0.001
Milwaukee campus	0.916	0.888 - 0.945	
Rural county residence			
Regional campus (comparison)	1	—	<0.001
Milwaukee campus	0.349	0.207 - 0.589	
Matriculating student multivariate model[a]			
Age			
Regional campus (comparison)	1	—	0.001
Milwaukee campus	1.422	1.146 - 1.764	
Total MCAT			
Regional campus (comparison)	1	—	<0.001
Milwaukee campus	0.830	0.755 - 0.914	
Rural county residence			
Regional campus (comparison)	1	—	0.010
Milwaukee campus	0.271	0.100 - 0.732	

Abbreviations: MCAT, Medical College Admission Test; GPA, grade point average.
[a]Models adjusted for age, sex, urban/rural residence, college GPA, MCAT score, and Carnegie 1 college designation.

application cycles under consideration. Six hundred forty-seven applicants indicated they preferred the Milwaukee campus, while 108 indicated a preference for the regional campuses. As shown in Table 1, applicants to the Milwaukee campus were more likely to be male, reside in an urban Wisconsin county, have graduated from a research-intense college, and had a higher MCAT score and college GPA. Students who preferred a regional campus were, on average, about a year older than those who indicated a preference for Milwaukee.

In 2017, the Milwaukee campus enrolled 204 students with 25 students each in Green Bay and Wausau. One hundred two (50%) of the students in Milwaukee were Wisconsin residents, while 41 (82%) of accepted students in the regional campuses were from Wisconsin. Table 2 shows that similar trends were noted among students who were accepted, although only MCAT, GPA, and student age were statistically significant ($P \leq .050$).

Multivariate modeling was used to evaluate the independent effect of prospective student characteristics. Table 3 provides the results of these models for both applicants and accepted students. The regression model shows that for applicants graduating from a Carnegie 1 college, attendance was a strong independent predictor for preferring Milwaukee (adjusted OR 1.626; 95% CI, 1.006 - 2.626), while being from a rural county in Wisconsin was independently associated with being significantly less likely to prefer the Milwaukee campus (adjusted OR = 0.349; 95% CI, 0.27 - 0.589). When we examined students matriculating to the campuses, Carnegie classification was no longer significantly different between the campus, whereas residing in a rural county was even more strongly independently associated with attending the regional 3-year campuses

DISCUSSION

These results demonstrate that the regional campuses of MCW in Green Bay and Wausau are attracting and accepting students with similar academic aptitude and prior experience but who are more likely to have grown up in a nonurban or rural community than those who attend MCW in Milwaukee. The strongest predictor of whether students are interested in and attend the regional campuses is that they are from Wisconsin rural counties. Students who apply to Milwaukee are more likely to come from Carnegie 1 research intense colleges, but once students are accepted, this no longer differentiates students at the regional campuses compared to Milwaukee. This implies that students who graduated from research-intense institutions fare better than when considered in the application review process at the regional campuses.

These results indicate that accepting more students to the regional campuses did not require a significant accommodation in academic preparation as defined by student GPA or MCAT scores. Adjusting for the student's age, sex, research intensity of their college, and whether they came from a rural background, GPA was not significantly different for students who applied to

or were accepted at the regional campuses. The regression model also showed that higher MCAT scores were weakly associated with acceptance and attendance at a regional campus. These findings are similar to those from other schools that have examined whether recruiting and accepting more students from rural backgrounds has a negative effect on the academic credentials of their medical students.[8]

While the 2 regional campuses appear to be attracting and accepting different students than the Milwaukee campus, this does not assure that these students will enter the specialties that are needed in the target areas of the state or whether they will practice in those areas. One study showed that the student's own perception of "growing up rural" was more important than permanent address in predicting future rural practice.[9] This study used the rurality of the student's home county, but this might not reflect a student's own perception of her or his home town. Additionally, other factors, which include the learning environment, curriculum, and mentoring, may influence a student's ultimate career choice and practice environment.[10] To achieve the goal of producing more doctors for Wisconsin's smaller towns, simply enrolling students from small towns might not be enough.

CONCLUSION

This study shows that compared to MCW's Milwaukee campus, the 2 new regional campuses are attracting students from smaller and rural communities in both the application and acceptance processes. Other than students at the regional campuses being slightly older, other student characteristics, including previous academic performance, appear to be similar.

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