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Effect of Regional Medical Campus Education on Student Pursuit of Primary Care Specialties

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Abstract

Purpose

To investigate whether education at a regional medical campus (RMC) affects the likelihood of University of Washington School of Medicine (UWSOM) students choosing a primary care specialty.

Method

Two approaches were taken to answer the study question. First, the percentage of UWSOM students who matched to a primary care residency program between 1996-2016 was compared between two groups of students: those educated at an RMC and those educated at the academic medical center (a non-RMC). Second, physician specialty data was obtained from the AMA Physician Masterfile for UWSOM graduates from 1996-2011. Physicians were again split into RMC and non-RMC groups, and the percentage of primary care physicians was compared between the two groups. This study was completed in 2016.

Results

Among graduates from 1996-2016, 33% (564/1707) of those educated at an RMC were matched to a primary care residency program compared to 39% (787/2003) of students educated at the non-RMC ($P < 0.001$). Graduates from 1996-2011 had similar likelihoods of becoming a primary care physician regardless of first year education site (37% [395/1078] versus 39% [551/1403], $P = 0.18$, Figure 2).

Conclusions

The results of this study did not support the hypothesis that the WWAMI RMCs produce more primary care physicians than the non-RMC. A greater percentage of students who attended the non-RMC matched into a primary care residency program compared to the RMC group, while the percentage of students who ultimately chose a primary care specialty was quite similar.

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Introduction

In 2006, the AAMC's Statement on the Physician Workforce requested medical schools expand enrollment by 30% from the 2002 level. In large part,

this recommendation was fueled by projections of a future physician shortage, particularly among primary care specialties.^{1,2} The primary care shortage was particularly concerning, as the supply of primary care physicians (PCPs) has been associated with improved health outcomes, including all-cause, cancer, heart

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disease, stroke, and infant mortality; low birth weight; life expectancy; and self-rated health.³ Medical schools responded to the AAMC's recommendation, and enrollment is projected to reach the 30% goal by 2017-18.⁴

As part of this expansion, the number of regional medical campuses (RMCs) has increased substantially since 2006.⁵ An RMC may be broadly defined as a campus geographically distinct from its parent institution that offers at least 6 months of medical education.⁶ The number of RMCs within the US increased to 98 as of May, 2013, and as of 2015, 35% of LCME accredited medical schools offer all or some of their curriculum at an RMC.^{7,8} The development of RMCs has become an attractive option to medical schools interested in expanding enrollment due to their cost-effectiveness and potential to improve health care access in areas of need.^{9,10}

The University of Washington School of Medicine (UWSOM) has long been recognized as one of the nation's leaders in producing primary care physicians. Additionally, it was one of the earliest adopters of the RMC education model in the early 1970's when the Washington Alaska Montana Idaho (WAMI) program was first conceived, with the addition of the Wyoming campus in 1996 to form the WWAMI program.¹¹ The program includes RMCs in each of the five states and the non-RMC in Seattle, an academic medical center. Historically, students accepted to the UWSOM completed their first year of basic science education at either an RMC or the non-RMC, followed by a second year of basic science education at the non-RMC. Students complete clerkships during the third and fourth years through the WWAMI region.

It is possible that RMCs may be more effective at producing PCPs than non-RMCs due to their community-based nature, favorable interactions with primary care physicians, and missions emphasizing aspects of medicine such as rural health or longitudinal care.^{12,13} However, little research has been done that evaluates career outcomes of students who are educated at RMCs. Two studies have been performed that compare family medicine match rates between RMCs and non-RMCs within the US, but to our knowledge no study has specifically compared primary care career outcomes.^{14,15} Thus,

the purpose of this study was to analyze whether UWSOM students educated for their first year at an RMC campus are more likely to enter a primary care specialty such as family medicine, general internal medicine, adolescent medicine, geriatrics, pediatrics, or medicine/pediatrics compared to those educated at the non-RMC.

Method

We took two approaches to evaluate the study question. For the first approach, we obtained match results for graduates of the University of Washington School of Medicine from 1996-2016 directly from the university. We then classified graduates from the regional campuses (Wyoming, Spokane/Pullman, Alaska, Montana, and Idaho) into an RMC group, and graduates from the Seattle campus into a non-RMC group.

We considered students who entered a pediatrics, family medicine, or internal medicine-primary care residency program to have matched to a primary care residency program and all others to have matched to non-primary care programs. We excluded students who deferred enrollment or did not match. We then compared the percentage of students who chose a primary care residency program between the RMC and non-RMC groups.

For the second approach, we obtained current specialty information for graduates from 1996-2011 from the AMA Physician Masterfile. We created RMC and non-RMC groups in the same manner as the match results. We excluded those without a known first year campus. We classified physicians practicing in family medicine, general internal medicine, adolescent medicine, geriatrics, pediatrics, or medicine/pediatrics as PCPs. We then compared the percentage of PCPs between RMC and non-RMC groups.

We used a Pearson's χ^2 test with a statistical significance threshold of $P < 0.05$ to perform both analyses. The University of Washington Institutional Review Board approved the acquisition and analysis of subject data.

Table 1

Number of graduates from each UWSOM campus gathered using match lists from 1996-2016 and the AMA Physician Masterfile from 1996-2011.

Campus	No. Matched Graduates	No. Deferred	No. without match or unknown	No. Physicians
Spokane/Pullman	491	8	3	284
Montana	405	9	2	291
Idaho	366	4	0	254
Alaska	259	6	1	147
Wyoming	186	1	2	102
Unknown	NA	NA	NA	28
All RMC	1707	28	8	1106
non-RMC	2003	57	8	1404
All	3710	85	16	2510

Results

The match lists from 1996-2016 included 3811 graduates. Of those subjects, 85 students deferred residency matching and 16 had an unknown or no match. The RMC group included 1707 graduates while the non-RMC group included 2003 graduates (Table 1). Analysis of primary care match frequency between the two groups revealed a 6% (787/2003 versus 564/1707) greater primary care match frequency among non-RMC graduates compared to RMC graduates ($P < 0.001$, Figure 1).

Current practice information was available for graduates from 1996-2011 and included 2510 physicians. Of those subjects, 28 did not have a known first year campus. The RMC group included 1106 physicians while the non-RMC group included 1404 physicians (Table 1). This data set demonstrated a similar percentage of physicians practicing in primary care between the two groups (37% [395/1078] versus 39% [551/1403], $P = 0.18$, Figure 2).

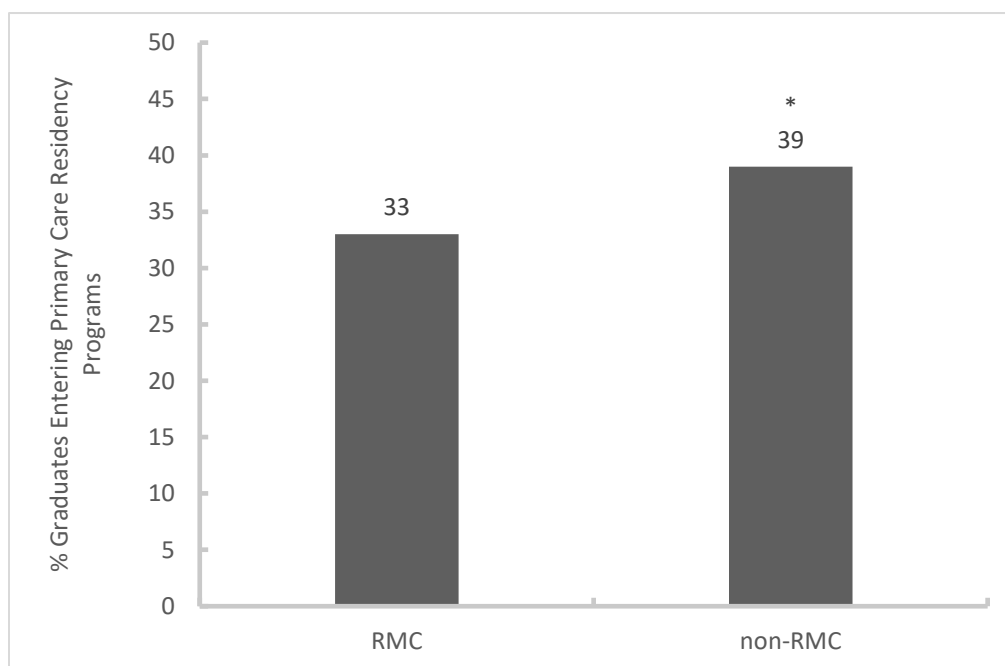


Figure 1 Percentage of RMC medical school graduates versus non-RMC graduates who were matched to a primary care residency program (1996-2016). * $P < 0.001$

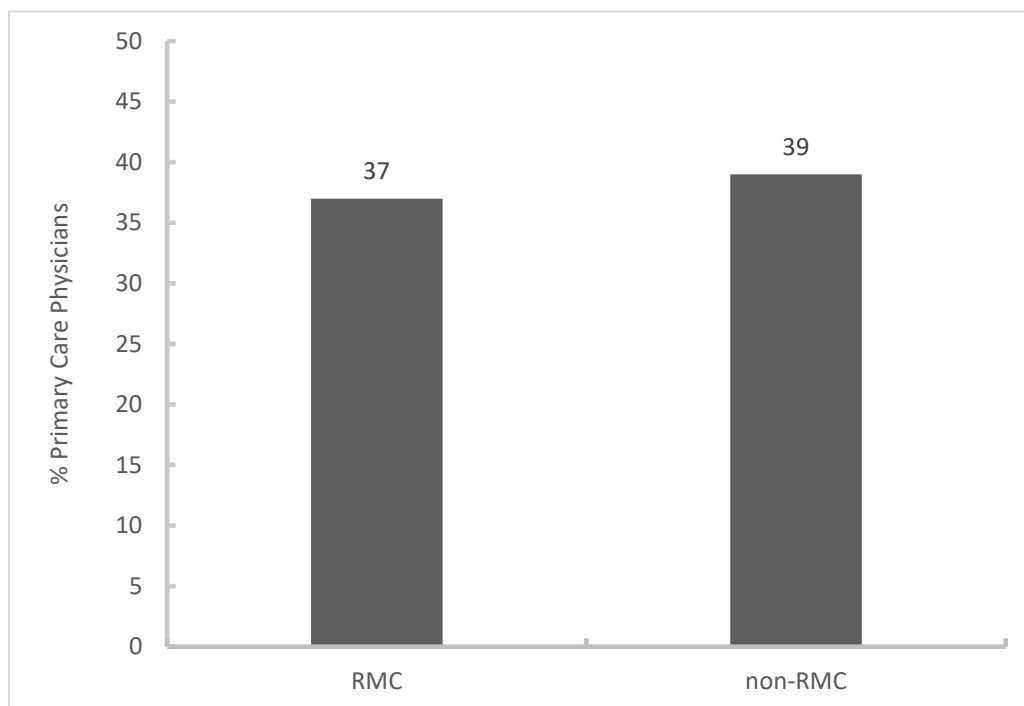


Figure 2 Percentage of RMC medical school graduates versus non-RMC graduates who chose a primary care specialty (1996-2011).

Discussion

The results of this study did not support the hypothesis that the WWAMI RMCs produce more primary care physicians than the non-RMC. A greater percentage of students who attended the non-RMC matched into a primary care residency program compared to the RMC group, while the percentage of students who chose a primary care specialty was quite similar.

The contrast between the results of our two approaches suggests that graduates from the non-RMC who attend a primary care residency program are more likely to choose a non-primary care specialty at some point during residency. There are many characteristics of primary care residency programs that could influence a resident's choice to pursue further specialty training. For example, some primary care residency programs are run by academic medical centers which value further specialty work.

It is important to note that the above conclusion remains speculation because the data collected from the match lists and AMA Physician Masterfile are not directly comparable. The current practice information from the Masterfile could only reliably be collected

through 2011 as more recent graduates may still be in a residency or fellowship program. The Masterfile data itself has well known limitations and only includes approximately 83% of graduates within the given timeframe compared to the match lists which accounts for a higher percentage of graduates.

There are many other limitations to this study, primarily in the form of confounding variables. Although pediatric and internal medicine residents may become primary care physicians, many pursue further specialty training. Approximately 20-25% of internal medicine residents and 40% of pediatric residents choose primary care.¹⁶⁻¹⁷ Also, choosing a specialty is a complicated decision, and many variables have been associated with that decision making process. Some variables include gender, preference for rural or urban areas, socioeconomic background, rural background, specialty preference prior to medical school, and specialty-specific characteristics such as technical skills, income, lifestyle, or patient interaction.¹⁸⁻²⁰

Additionally, there are characteristics intrinsic to the UWSOM and WWAMI program that may influence the results. For instance, even though a significant proportion students spend their first two years at the non-RMC in Seattle, many of those students choose to

complete their clinical clerkships at one or more of the 170 available community education sites.¹⁰

The UWSOM is also notable for its implementation of the Colleges system, a system of mentorship through which a small group of students is mentored by a physician, typically in a primary care specialty, with the goal of developing clinical skills.²¹ This system likely has an influence on specialty choice, as exposure to role models has been shown to strongly associate with residency program choice among medical students.²²

Finally, the UWSOM has a number of specialty programs designed to attract students to primary care and rural practice which many of the non-RMC graduates participate in: WWAMI Rural Integrated Training Experience (WRITE), which is a longitudinal integrated clerkship in a rural community for 6 months of third year; Targeted Rural Underserved Track (TRUST), through which students continually return to a regional site for clinical education throughout their training; the Rural/Underserved Opportunities Program, a one-month primary care experience in a rural community; and Track, which enables students to complete some or all of their clinical training in a particular regional location.^{11,23,24} Incorporation of similar programs may improve primary care match frequencies among existing medical schools, although their effects on specialty choice have yet to be determined.

The above aspects of UWSOM education are reflective of its mission which emphasizes the importance of primary care and delivering care to underserved areas in the region. The RMCs do not have distinct missions from the main campus, which is in contrast to other schools or schools missions.²⁵ Thus, the success of the UWSOM in producing primary care physicians at both RMCs and its academic medical center is in all likelihood a result of a collective effort to address the health needs of the WWAMI region.

While medical school expansion appears to be on track to meet future physician demand, in part due to implementation of RMCs, it is unclear whether the physicians produced by these campuses will address an equally critical problem of specialty maldistribution. This information is an important step

toward understanding how the rapidly expanding RMC educational model affects student specialty choices.

We consider this information valuable to policymakers and university administrators considering medical school expansion. RMCs have become a widespread option, but there are many different types of RMCs to consider. Only recently have RMCs been defined and divided into distinct classifications: basic science, clinical, longitudinal, and combined models.⁶ The University of Washington School of Medicine utilizes the basic science model of RMCs, where students spend a portion of their basic science education at one of the WWAMI locations. For policymakers and university administrators considering medical school expansion via RMCs, this study provides valuable information about how the basic science model RMC may affect specialty choice of future students.

Further investigation of RMCs must be done in order to assess their current and potential impact on physician workforce and distribution. Studies of individual RMC programs may be useful, as those successful at producing physicians that meet local and national workforce needs can be emulated by future medical school expansions. Ideally, these studies would control for variables that have been shown to have an effect on specialty choice. Large-scale studies of specialty choice that include many RMCs would also be valuable, particularly if they utilize the most recent RMC classification. Finally, it is important to continue investigating factors which influence the geographical distribution of physicians, as inequities in distribution also contribute to inadequate supply in many regions.

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