

Factors that influence physicians to practice in rural locations: a review

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Abstract: *Context: Rural populations remain underserved by physicians, despite various efforts by medical schools and other institutions/organizations to correct this disparity. Purpose: We examined the literature on factors that influence rural practice location decisions by physicians, to determine what opportunities exist along the entire educational pipeline to entice physicians to, and retain them in, rural areas. Methods: A literature review was conducted in the Medline database. Findings: Results reported in the literature favor a multidisciplinary or multi-faceted approach which results in more residents and physicians locating their practices in rural areas. Conclusions: The need to define proven strategies is not the pressing issue; rather, the needs are to define the commitments necessary to implement proven strategies as well as the will to make physician distribution a priority issue in medical education.*

Keywords: physicians, professional practice location, rural health, career choice

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INTRODUCTION

The shortage of physicians in rural areas of the United States remains a persistent problem. About 11% of all physicians treat the 20% of the US population that resides in rural areas [1]. The state of Georgia, for example, ranks 9th in population among the fifty states, but 39th in physician supply per 100,000 population [2]. In 2008 Georgia's medical student to population ratio was 20.5 per 100,000, which was significantly lower than the national average of 29.2 per 100,000 [3]. In February 2005 the Association of American Medical Colleges recommended that enrollment at medical schools be increased by 15% over the next 15 years. In response to this recommendation and the persistent need for more physicians in the state, all medical schools in Georgia have expanded their class sizes and several have developed satellite campuses. In addition, the Philadelphia College of Osteopathic Medicine opened a new campus in Georgia in 2006. This campus is accepting 80 students per year in its DO program.

The decline in rural physician supply may become more severe with time. Female physicians are entering the profession, especially family practice, in increasing numbers, but fewer women than men choose rural practice [4, 5]. The number of graduates who choose careers in generalist medicine or family practice has also declined; these graduates make up the majority of physicians who decide on rural practice locations [6, 7]. Research has shown that physicians from rural backgrounds are more likely than their urban counterparts to choose rural practice [8-10]. While medical school admissions requirements aimed at selecting applicants based on their rural upbringing or strong rural attachment is a proven way to increase the number of rural physicians, too few rural students are applying to medical schools to ameliorate the shortage, and too few medical schools utilize this criterion in the admissions process. Fortunately, many other factors appear to influence physicians' practice location decisions, especially rural practice locations. These factors fall into five general categories: preparation for and recruitment by medical schools,

the medical school experience, the residency experience, recruitment of physicians to rural communities, and retention of rural physicians.

We searched the published literature in each of these five areas to determine what opportunities exist along the entire educational pipeline to develop and strengthen students' intentions to practice in rural areas, how residents and practicing physicians might be enticed to practice there and how to retain them once they are located in such areas. We have a compelling need to gain more physicians for rural Georgia, and identifying proven strategies to address this need was the motivator for our literature review. While each state has unique aspects and problems, we expect some commonalities will emerge from our review.

DATA SOURCES

A literature search of the MEDLINE database was conducted, covering the years 1966 to 2008. MeSH headings used included: *physicians; physicians, family; physicians, women; professional practice location; rural health services; rural health; career choice; education, premedical; medical education, undergraduate; medical schools; medically underserved area; rural population*. Only English-language articles were selected. Much has been written on this topic in Canadian and Australian medical journals; those articles most applicable to the United States were included. We focused on research on large groups, such as surveys of graduates from long-standing programs, and on articles that addressed gaps in the literature. Articles were grouped into the five categories listed above.

RESULTS

Preparation for and recruitment by medical schools

Many medical schools currently offer short summer programs for high school and undergraduate students. Some of these short programs are aimed at minorities or other underrepresented

groups and are designed to increase the academic competence and competitiveness of participants. Several states facing severe physician shortages have developed more extensive interventions. These programs generally begin in high school, can last for several months or years and usually feature some combination of physician shadowing, hands-on activities, and classroom learning or tutoring. Many Area Health Education Centers (AHECs) offer such programs or coordinate them with academic medical centers. Reaching students, especially those from rural areas, early in their academic careers can result in increased interest in and preparation for a career as a health professional.

McKendall [8], Knopke [9], and Crump [10] have reported on programs that expose rural high school students to health careers and provide GPA and ACT tutoring. Students who finished the programs have higher ACT scores as well as benefiting from an exposure to health career opportunities in their own communities. Research strongly suggests that upbringing in a rural area is a key factor for a decision to work in a rural primary care practice [11, 12]. When rural students are academically qualified, their subsequent admission to medical schools will likely result in the graduation of higher numbers of physicians who return to rural communities [13].

Experiences During Medical School

We examined articles about schools with two types of programs: those with extended rural clerkships; and those with either selective admissions for family medicine / primary care studies, or entirely separate educational tracks for primary care. Both types of programs have proven effective in maintaining and encouraging students' interests in rural primary care.

Rural Clerkships

Blue et al [14] described a four-week rural primary care clerkship required for all third-year students at the Medical University of South Carolina. At the end of the course, students completed a questionnaire that assessed their beliefs about rural primary care physicians. The

students' perceptions of rural practice became significantly more positive after completing the clerkship. Working with the spectrum of patients seen by a rural practitioner, and observing the personal and social respect given to a rural physician, helped to positively influence these students. Although these students had not yet completed residency and therefore did not have practice locations, other evidence shows that positive rural experiences during medical school can have a strong influence on practice location choices [15].

In Colorado, Fryer et al [16] studied an AHEC program that offered extramural rotations for medical students. More students who had experienced at least one extramural rotation listed their specialty as one of three primary care specialties than did students who had not participated in these AHEC supported rotations. The authors noted that while there was initially some faculty reluctance to entrust clinical preparation of students to non-academics, the students scored as high on the National Medical Board Examination for their specialties as had students who were taught or precepted in the university setting.

The Appalachian Preceptorship at East Tennessee State University has offered a month-long medical school clerkship that has both a clinical component and a week of complementary classroom instruction [17]. The program, in existence for over 20 years, is designed to increase retention in rural practice by emphasizing the attractive cultural and practical aspects of a rural community. Residency choices of the 164 participants who matched prior to 2005 indicated that 82% selected a primary care specialty. Of the former students whose practice location could be identified, 33% of graduates chose a rural practice location, more than three times the national average.

The University of Washington created the WAMI program for medical students from Washington, Alaska, Montana and Idaho. Phillips et al [18] reported on the long-term effect of the program's required family medicine rural clinical clerkship. The goal was to have at least 20% of each class enter family medicine, but when the first six graduating classes were studied in 1994, more than

30% of the graduates had entered family medicine residencies, and 57% of all graduates were still in family practice.

Despite all efforts to ensure that students with rural backgrounds maintain a desire to return, there are not enough of these students to alleviate the shortage of rural physicians. With this in mind, an Australian study by Tolhurst, Adams and Stewart examined how medical students from an urban background became interested in rural practice[19]. Exposure to rural practice generated interest in rural practice among many of these students. Those who demonstrated high levels of altruism, interest in primary care, and an affinity for certain leisure activities (hunting, hiking, fishing, etc.) were more likely to be interested in locating to a rural area. Spouses or partners were an important influence in increasing or decreasing rural practice selection decisions.

Special Admissions Criteria and Education Programs in Medical Schools

The Physician Shortage Area Program (PSAP) at Jefferson Medical College in Pennsylvania is a special admissions program developed in 1974 to identify medical student applicants who would eventually practice family medicine in underserved areas [20]. Qualified applicants are given high priority for the program only if they had lived in or had strong family ties to an area in or adjacent to a physician shortage area of Pennsylvania. Upon admission, students are required to take several family medicine clerkships. Rabinowitz found that these students are five times as likely as their peers to enter family medicine, and almost twice as likely to enter this specialty compared to non-PSAP students who entered Jefferson Medical College with the desire to become family physicians. Based on studies of PSAP graduates, the selective admissions component of the PSAP is the most important reason for its success [21, 22]. Replication of the PSAP program, or similar programs focused on rural outcomes, at all 125 US allopathic medical schools could result in 1,139 rural physicians annually if results were similar [22]. Selective admissions policies that give preference to rural candidates do not result in the acceptance of unqualified applicants. Like

the PSAP, the University of Missouri-Columbia School of Medicine studied their rural medical school applicants and determined that the school was able to maintain competitive admissions criteria while still admitting students who were most likely to choose rural practice [13]

The Rural Medical Education Program (RMED) at the State University of New York Upstate Medical University has documented success at graduating high numbers of physicians who chose rural practice locations [23]. Students in the RMED program receive their clinical training in rural communities rather than on the SUNY Upstate campuses, spending 36 weeks under the guidance of a primary care preceptor, usually a rural family physician. When graduates of the program were surveyed, 84% said the program had helped them choose a rural practice location. Administrators of the community hospitals that hosted the students also reported satisfaction with the program, specifically mentioning how it helped with recruiting new physicians.

A combination of selective admissions and focused rural/generalist curricula may be the best way to increase the number of medical school graduates who intend to practice in rural areas.

Kassebaum and Szenas urged educators to focus their efforts on sustaining and increasing all students' interest in generalist medicine and rural practice, regardless of rural or urban background [5], since the number of students with rural backgrounds is too small to make up for present and future shortages, even if all were to choose rural practices.

Experiences During Residency

Residency programs

Family practice residency programs that graduate higher numbers of rural physicians share similar qualities, according to Bowman [24]. These programs had more required rural and obstetrical training months, were located in rural states, and had a full or partial rural mission.

Unfortunately, these programs also had fewer residents who were minorities or female, two groups which are of importance to the rural health workforce.

The University of New Mexico (UNM) family medicine residency program has more rural-background and minority residents choosing rural practice than all other UNM specialty graduates combined (25.9% compared to 10%). The program is decentralized, placing residents outside the training hospital for several months of their three years' training. Three residency sites were created outside the Albuquerque metropolitan area. Residents also participate in a state-sponsored locum tenens program providing practice relief for rural practitioners. A greater percentage of ethnic minority graduates from UNM practiced in rural areas and stayed in the state (44.7%) compared to ethnic minority graduates who were from other medical schools (22.2%) [25].

Spending large amounts of time in rural areas during residency reinforces practitioners' affinity for those areas. Rural training tracks (RTTs) are "one-two" programs that require residents to spend one year in an urban-based residency and two years in a rural community. RTTs have a high number of graduates who remain in rural areas to practice. Rosenthal [26] studied 13 RTT programs that collectively produced 67% of graduates with a primary office ZIP code in a rural community, and 61% that practiced in a designated Health Professional Shortage Area (HPSA). A Canadian study found that regardless of rural background, rural physicians were more likely than urban physicians to have had clinical training in a rural setting of greater than 6 months during residency [27].

Results concerning female physician selection of rural practices are mixed. Some studies show lower selection rates among women [4, 5, 11]. However, Rosenfeld and Zaborlik conducted a survey of family practice residency graduates in southern Appalachia that found more women than men were practicing in small towns [28]. Characteristics of the physicians' practices were similar, as were their reported reasons for choosing a practice location.

Recruitment of physicians

A strong correlation exists between the state or region in which a physician is practicing and the geographic area in which he or she 1) lived during pre-adulthood, 2) attended medical school and 3) completed a residency [29]. Interpersonal relationships play a major role in influencing a physician's practice location decision. A good interpersonal match with future colleagues can be a strong indicator of a satisfactory practice location. If the physician has a partner or spouse, both must determine whether a community is a good fit for them [30].

Riley et al surveyed graduates and current residents from twelve family practice residency programs in the western United States [31]. Among those surveyed, faculty contacts and personal presentations from prospective colleagues or employers were the most preferred methods of learning about job opportunities. Riley recommended certain strategies to assist rural communities in physician recruitment: create a diverse recruitment committee; plan the recruitment strategy carefully; identify prospects early and stay in touch during residency; make a good first impression; identify the interests of a recruit's spouse or partner (including job opportunities); pay for as much of the site visit as possible; and follow up after the visit [31].

A survey of recent female recruits in the Pacific Northwest region of the United States identified three important focus areas for positive rural recruitment experiences: cultivating good recruitment relationships, offering attractive practice arrangements, and emphasizing the strength of the medical community [4]. Communities are more likely to recruit female physicians if they communicate effectively and address spouse/partner, childcare, and scheduling issues during the recruitment process [32].

An organized community effort can result in successful recruitment of physicians. A study of South Carolina physicians found that more than half of those who locate in rural communities were actively recruited to establish their practice there, as opposed to only 31% of those in urban

communities [33]. Combining traditional recruitment activities with community development allowed the Arkansas Southern Rural Access Program to recruit 8 new primary care providers to an underserved rural area in a 2-year period [34]. The recruiter worked with local providers, community leaders and residents to design and implement various improvements that would make their rural community more attractive to new health care providers. Development of a “regional recruiter” position that involved community members in recruitment and retention of primary care providers proved to be cost-effective and was replicated in several other southern states.

Retention

What is the relationship between physicians’ training, the physicians’ self-preparedness for rural life, and retention? Pathman and colleagues collected data to study how prepared physicians felt themselves to be when they began working in their first rural practice for the requirements of medical practice and the “realities of living” there [35]. Physicians were asked to identify the single training experience that had best prepared them for rural practice. Fifty-four percent reported that growing up in a rural area had best prepared them. Those who had spent three or more months in rural areas during medical school, or had participated in rural rotations as residents, felt better prepared for small-town life. Physicians’ assessments of their most valuable training experience cited clerkships and residency rotations in rural areas as the activities that provided them with their best preparation for rural practice. According to Pathman’s survey, physicians who self-reported feeling “more prepared” or “prepared” for rural life were twice as likely as unprepared physicians to still be there six years later.

According to research conducted by Rabinowitz, Diamond et al, the typical primary care physician remains in rural practice in the same area for approximately seven years. This is the same amount of time it takes to educate a new physician. The net result is one of replacement, but as the number of physicians intending to practice family medicine declines, the overall effect will not maintain the current rural physician supply, much less increase it. According to the authors’ study

of long term (11-16 years) retention of graduates from the first nine years of the Physician Shortage Area Program (PSAP) in Pennsylvania, the PSAP is the only program whose outcomes have been shown to result in multifold increases in both recruitment and long-term retention [36]. In light of recent national recommendations to increase medical school enrollment by 15%, Rabinowitz urges that some of this growth be allocated to developing and funding programs similar to the PSAP, as an effective way to address the rural physician shortage [36, 37].

Loan forgiveness or return-of-service (ROS) agreements have long been used as a tool for recruitment of rural physicians. Do these agreements result in long term retention as well? Sempowski reviewed the literature on ROS agreements and found ten articles on this topic that were judged to have the highest levels of evidence [38]. The author's review concluded that while most studies showed effective recruitment, the one prospective cohort study revealed that physicians who voluntarily chose to go to a rural area are far more likely to stay long term than are those who locate there as a result of an ROS commitment. Sempowski concluded that in the absence of a multi-dimensional approach, ROS programs have had less success with respect to long-term retention.

POLICY ISSUES

The search to find effective solutions to the problem of physician geographic distribution is not new, as evidenced by the wealth of published research. The need to define "what works" is not the pressing issue; rather, the needs are to define the commitments necessary to implement proven strategies as well as the will to change the status quo. Academic health centers are pressured to perform on many stages, including providing care for the indigent, educating highly trained practitioners, and producing voluminous research findings to add to the body of knowledge influencing clinical practice. Graduate practice location choice is, at best, a minor agenda item for most schools and residency programs. As long as the largest funding streams available to academic health centers are based on research, then the primary agenda will remain research excellence as defined by procurement of grant and research dollars. The historic three

part mission of most academic health centers, (education, clinical care, and research) does not speak to the more specific need to graduate physicians who will choose to practice in rural communities. To succeed, these programs must be funded in a way that implements proven strategies and rewards meaningful results.

Simultaneous with the expansion of the medical school pipeline resulting from nation-wide class size increases, there is increased attention focused on developing new and expanding existing residency programs. These expansions offer a unique opportunity to attempt new programming to address physician distribution challenges.

To encourage innovative changes in medical education that includes attention to physician distribution issues, a funding priority or a funding expectation must be articulated to encourage medical schools and residency programs to think creatively. The move towards outcomes measures as a condition of state funding is a potential opportunity to leverage programs that prioritize graduate geographic distribution goals. Providing financial incentives to programs that produce graduates at a defined level who choose practice in a rural area would encourage medical school faculty buy-in and creativity in addressing this challenge.

A far more subtle change must also occur. Currently, the leadership in academic medicine speaks about distribution and shortage challenges, but most institutions continue to provide larger resources and priority access to specialty and sub-specialty departments and faculty largely due to the higher clinical revenues generated by these units. Further, the constant pressure to obtain outside funding from federal and private grantors is a disadvantage for primary care oriented departments, for whom access to such funds is limited. Yet these departments produce the physicians most likely to practice in rural areas. Individual faculty prestige, promotion, and monetary rewards are largely tied to the ability to procure funds through research or clinical revenue rather than the ability to mentor students into needed disciplines, implement community oriented curricula, and shepherding students / residents towards practice in HPSAs and /or rural areas. Present recruitment resources that assist graduates seeking a practice in a rural community are minimal or nonexistent at most institutions.

CONCLUSION

In this literature review, we identified strategies that effectively influence practice location choice towards rural areas. While “nature” or rural background is a common factor in many physicians who choose rural practices, “nature” or programs that encourage and maintain rural affinity and intent to choose family medicine or primary care are also a necessary component in a budding rural physician’s education and residency. High school programs are shown to encourage rural students to develop an interest in medicine and gain admission to competitive colleges.

Undergraduate programs also connect premedical students to local rural practices. Medical school clerkships in rural areas keep students connected to rural life and strengthen their intention to practice in rural areas. Effective recruitment efforts that highlight the positive aspects of rural life and address work-life balance are also shown to attract providers and retain them in their rural practices.

These findings are not surprising. The challenge appears to be in generating the will to implement proven interventions widely and with consistency, and in creating a sense of priority around guiding graduate practice location choice. Until the need to provide physicians for all communities is clearly embraced by medical schools and programs are funded and implemented widely, only a limited number of schools will continue to specifically address the needs of rural populations. Given that all medical education is subsidized at some level by state and federal taxes, it would seem fair that all citizens should have some expectation of a return on this investment. Were this indeed the case, all medical schools and residency programs would have some concentrated programming in place to influence practice location and discipline specific choices. Until these needs are accepted as a mandate to be addressed by all engaged in the medical education pipeline, we will continue to see expansions without specific discipline and geographic targets based on the needs of the states and the nation.

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