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PROJECT REPORT

Using area health education centers to promote interest in rural practice

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ABSTRACT

Introduction: In the USA, area health education centers (AHECs) work to recruit and educate students to serve in medically underserved communities, primary care, and rural settings. One important aspect of their work is connecting students with rural clinical experiences. Within these experiences, AHECs incorporate a community health/socioeconomic experience within the family medicine clerkship that may not be as prevalent in the standard family medicine clerkship experiences. The purpose of the study was to assess the relationship between AHEC-sponsored family medicine clerkships with a self-reported intent to practice in a rural setting upon graduation.

Methods: The study compared third-year medical students with the Indiana University School of Medicine, which participated in AHEC-sponsored family medicine clerkships to the standard family medicine clerkship. Following the 4-week clerkship, students were asked to report their intent to work in a rural setting using a five-point Likert scale. A χ^2 test was used to determine the association of AHEC sponsorship, clerkship site location (rural/urban) and intent to practice in a rural setting.

Results: The study consisted of 587 students. There was a statistically significant association between self-reported intent and rural clerkship site, χ^2 (1, N=587)=6.542, p=0.01. Furthermore, 21.6% (n=25) of students with a rural clerkship experience reported a greater intent compared to 12.3% (n=58) of students with non-rural clerkship experience.

Conclusions: The study confirmed a significantly positive association between participation in medical clerkship experiences in a rural primary care setting and the intent to practice in a rural setting upon graduation. The results also support the potential value-added benefits through academic–community partnerships with AHECs, family medical and other primary care specialty clerkship programs may perhaps succeed in increasing student interest in pursuing a practice serving in rural communities upon graduation.

Key words: area health education centers, clerkship, community/academic partnership, intention, USA.

Introduction

Challenges still exist in the identification and implementation of educational strategies that will address physician shortage areas in rural areas. One strategy for encouraging students to practice in a rural community upon graduation is the use of a comprehensive medical education program integrating rural curriculum content with experiential learning that recognizes the unique needs of individuals living in rural settings[1]. The concept of using a student's training location as a predictor of where they serve is a group trend to be utilized as a potential way to influence eventual practice[2].

In the USA, the mission of the Indiana Area Health Education Centers (AHEC) Network is to improve health by recruiting, educating, and retaining healthcare professionals for underserved communities in Indiana[3]. One approach in this mission is to provide third-year medical students with the opportunity to serve Indiana's most vulnerable populations in medically underserved communities, primary care, and rural settings during their required family medicine clerkship experience. AHECs do so by partnering with community-based practitioners in both rural and medically underserved communities to provide students with decentralized clinical experiences. Research shows that the medical education experience can have a positive impact on the student's intent to practice in a rural setting upon graduation[4-6]. Geske et al. identified that a rural family medicine clerkship exposure for third- and fourth-year medical students had a small positive influence on their intent to serve in a family medicine practice within a rural area[7]. Research also demonstrated that high-quality preceptors/mentors and a well-designed educational curriculum can lead to a positive intent for a student to practice in a rural setting[5].

The clinical experiences facilitated by regional AHECs in Indiana is a specific strategy designed to strengthen the intent of third-year medical students to pursue a practice in medically underserved communities, primary care, and rural settings upon graduation. Within these experiences, regional AHECs incorporate a community health/socioeconomic experience within the family medicine clerkship that may not be as prevalent in the standard family medicine clerkship experiences.

The primary goal for this study was to assess whether third-year medical students participating in AHEC-sponsored family medicine clerkship experiences report a greater intent to serve in rural areas upon graduation in comparison to third-year medical students in non-AHEC-sponsored family medicine clerkship experiences. The authors anticipated that the increased number of rurally located experiences available through the AHEC partnership would result in more students in AHEC-supported clerkships reporting a strengthened intent to practice in a rural area upon graduation.

Methods

The research is a retroprospective cohort study evaluating the association between the self-reported intent of third-year medical students to practice in a rural setting upon graduation and their participation in an AHEC-supported family medicine clerkship experience. The Indiana AHEC network partners with the Indiana University Department of Family Medicine to provide decentralized family medicine clerkship opportunities for third-year medical students. Students are then assigned to a clerkship setting by the clerkship staff in the Department of Family Medicine. While students may request a location, such requests are not guaranteed and students are assigned to locations as available.

For the purposes of this study, while a rural definition was not provided to the medical students completing their post-clerkship questionnaire, each practice site was determined for rural eligibility using the Rural Assistance Center's Am I Rural? service/tool. There are several definitions for 'rural'. For example, the US Census Bureau defines as rural anything that is not considered urban (leaving 'rural' to mean 'having less than 2500 people'), the White House Office of Management and Budget defines 'rural' as a location that is neither metropolitan or micropolitan (leaving 'rural' to mean

'having less than 10 00 people'), and the Office of Rural Health Policy accepts all non-metropolitan counties as rural using the Rural–Urban Commuting Area (RUCA) codes (leaving 'rural' to mean '400 square miles [1036 km^2] in area with a population density of no more than 35 people')[8]. The Am I Rural? service uses each of these definitions collectively to help determine whether a specific location is considered rural based on various definitions of rural identified previously[9].The authors tested the following hypothesis: third-year medical students participating in AHEC-supported family medicine clerkship experiences are associated with a 5% increase in the proportion of students reporting an intent to serve in a rural location than their fellow students participating in traditional family medicine clerkships.

As part of ongoing longitudinal tracking of AHEC alumni program participants in Indiana, clerkship data from Indiana University School of Medicine, Department of Family Medicine was accessed. This clerkship data source allowed the researcher to identify those students participating that required third-year family medicine clerkship programs, whether the clerkship program was supported (or sponsored) by AHEC, as well as, the students' corresponding response to an evaluation question distributed by the Department of Family Medicine measuring their intent to practice in a rural location upon completion of their residency experience. The inclusion criteria for this study was that the participants must have been enrolled students with the Indiana University School of Medicine and had participated in a family medicine clerkship experience between November 2009 and July 2014, and responded to an evaluation questioning their intent to serve in a rural location upon entering professional practice. The primary outcome of this study is to assess the association between participation in an AHEC family medicine clerkship experience and the self-reported intent to professionally practice in a rural community.

At the completion of their 4-week (160 hours) family medicine clerkship experience, all third-year medical students were asked to participate in a survey as part of their post-clerkship evaluation. Each student completed their post-clerkship evaluation using Cardiff TeleForm (Hewlett-Packard; http://www8.hp.com/us/en/solutions/software/ teleform.html) and submitted to the Indiana University School of Medicine, Department of Family Medicine. Each student was asked to respond to the statement 'I intend to work/practice in a rural setting' using a five-point Likert scale ranging from 'strongly agree' to 'strongly disagree'. Any responses of 'strongly agree' or 'agree' were coded as a positive response for this study. In an effort to determine the potential relationship between participation in an AHEC-sponsored family medicine clerkship experience and an intent to practice in a rural location upon completion of residency, student clerkship data for this study were extracted from the Indiana University School of Medicine Department of Family Medicine clerkship program. The researcher obtained permission and instruction from the clerkship program staff for the purposes of this study.

Clerkship data were collected from the Indiana University School of Medicine and coded to determine the association with response to intent to serve in a rural community. Past medical students during the study time period were grouped into two categories: whether their required third-year family medicine clerkship program was facilitated through an AHEC-sponsored program and whether the student self-reported intent to practice in a rural setting upon completion of residency training. Students' self-reported intent to practice in a rural setting was categorized as either a positive intent or no intent to serve in a rural setting. Additional demographic information on each student was identified, such as gender, race, ethnicity, and background (whether students were from an urban or rural environment).

A χ^2 test of independent means to determine the effects of gender, race, and ethnicity was conducted to assess the relationship between the type of sponsored clerkship experience and the self-reported intent to serve in rural areas using the Statistical Package for the Social Sciences v20 (IBM; http://www.spss.com) with two-sided $p<0.05$ considered to be statistically significant.

Ethics approval

This study received exempt approval by the Institutional Review Board of Indiana University on 21 April 2014 (protocol number 1404778136).

Results

Between November 2009 and July 2014, 1138 third-year family medicine clerkship students completed the required 4-week family medicine clerkship experience with Indiana University School of Medicine. Of those students, only 52% (n=587) met the inclusion criteria for the study. The remaining students failed to complete the evaluation question asking about intent to serve in a rural area ('I intend to work/practice/serve in a rural setting'). Within the remaining 587 students, 112 (19%) were assigned to AHEC-supported clerkship sites.

AHEC provides a considerable contribution to connecting third-year medical students with family medical clerkships in rural sites. Of those within this study, 42 (36.2%) of non-AHEC clerkship sites were located in rural settings while 74 (66.1%) of the AHEC-supported clerkship sites were located in rural settings (Table 1).

The gender distribution of students represented in this study is 57.1% male and 42.9% female. Approximately 77.7% of the study participants were white in race, 7.1% black or African American, 14.2% Asian, and the remaining (1.0%) were American Indian or Alaska Native, Native Hawaiian or other Pacific Islander or more than one race. In terms of ethnicity, only 0.9% of the participants self-reported as Hispanic or Latino.

A χ^2 test of independence was performed to examine the relation between participation in a rural clerkship experience and the self-reported intent to practice in a rural setting upon graduation. The relation between these variables was significant, χ^2 (1, N=587)=6.542, p=0.01. Students participating in a rural clerkship experience were more likely to report intent to practice in a rural setting up on graduation than their peers with clerkships in non-rural settings. Approximately 21.6% (n=25) of students who experienced their family medicine clerkship in a rural practice setting reported a greater intent to practice in a rural setting upon graduation as compared to 12.3% (n=58) of their fellow students in third-year family medicine clerkship experiences who experienced a non-rural practice setting (Table 2).

A χ^2 test of independence was performed to examine the relation between participation in an AHEC-sponsored family medicine clerkship experience and the self-reported intent to practice in a rural setting upon graduation. The relation between these variables was not significant, χ^2 (1, N=587)=2.423, p=0.083. Students in an AHEC-supported clerkship experience were not significantly more likely to report an intent to work in a rural setting upon graduation as their peers. While not significant, the analysis demonstrated an increased trend among students participating in AHEC-supported clerkship reporting an increased intent to practice in a rural area (18.8%) compared to 13.1% of their peers.

A χ^2 test of independence was performed to examine the relation between the students' rural/urban background and the self-reported intent to practice in a rural setting upon graduation (Table 3). The relation between these variables was not significant, χ^2 (1, N=587)=3.041, p=0.22. For this specific cohort, students from a rural background were not more likely to report intent to work in a rural setting upon graduation as their peers from an urban background.

Discussion

The findings of the study confirm previous research addressing the significant connection between participation in a rural clerkship experience and the increased intent to practice in a rural setting upon graduation. The positive association between participation in medical clerkship experiences in a rural primary care setting and the intent to practice in a rural setting upon graduation falls in line with the research that states medical educational experiences can have a positive impact on the intent to practice after graduation[2,9]. Given that there are many variables that may arise between when a medical student reports their intent to serve in a rural community and their eventual practice location, more follow-up research is needed to determine if the students actually end up practicing and staying in rural settings.

Table 1: Number of clinical practice sites in a rural setting

Site	Standard	AHEC-supported
Non-rural clerkship site	433	38
Rural clerkship site	42 (36.2%)	74 (66.1%)

AHEC, area health education center

Table 2: Comparison of clerkship type vs self-reported intent to practice in a rural setting

Site	No intent to practice in a rural location	Intent to practice in rural location
Non-rural clerkship site	413 (87.7%)	58 (12.3%)
Rural clerkship site	91 (78.4%)	25 (21.6%)

Table 3: Comparison of clerkship type vs self-reported increased intent to practice in rural areas

Site	No intent to practice in rural location	Reported intent to practice in rural location
Standard family medicine clerkship	413 (86.9%)	62 (13.1%)
AHEC-sponsored family medicine clerkship	91 (81.3%)	21 (18.8%)

AHEC, area health education center

There are several limitations potentially associated with this study. The first is the complex nature of practice selection. Many variables that play a role in a student's selection of practice setting, beyond time spent engaged in a 4-week clerkship experience, could not be accounted for in this study. Second, while the authors surveyed students' intent to work/practice/serve in rural settings, they were unable to directly measure additional obstacles that would prevent such service, even among those with significant interest. Tolhurst et al. identified a complex number of variables that influence a student's consideration when selecting whether to practice in a rural area, such as their level of altruism to help others, personal work interests for themselves (and their loved ones), life experiences, social relationships, role models, and rural experiences[10]. A third limitation is the sample size of the study. Given the small numbers of students from minority race/ethnicity and disadvantaged backgrounds, the authors could not determine if those variables would serve as a predictor in their reported intent to serve rural populations. Additionally, only a small number of students (83) in this cohort reported growing up in a rural area compared to their non-rural counterparts (504). This may account for the lack of a reportable significant difference for rural intent between those alumni in rural areas versus non-rural areas. The final potential limitation is that of human error and the self-reporting nature of the data. As a next step, the Indiana AHEC program is currently tracking this cohort of medical students for future analysis on their practice location to determine if the intent to practice in a rural setting resulted in actual practice location.

Conclusions

The research confirmed a significantly positive association between participation in medical clerkship experiences in a rural primary care setting and the intent to practice in a rural

setting upon graduation. The results also allude to a potential positive trend that utilizing AHECs to develop community-based rural clinical experiences for students may provide students with the experience vital for improved intent to practice in rural areas upon graduation. The results support potential value-added benefits of academic–community partnerships between AHECs with family medical and other primary care specialty clerkship programs. Collaboration between academic and community entities may succeed in increasing student interest in pursuing a practice serving in rural communities upon graduation.

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