Promising Practice Article

Inspiring Rural High School Students to Consider Careers in Medicine and the Health Professions

Morgan Cari Dunn
Norma Susswein Saks

The United States is experiencing a physician shortage and rural areas are especially impacted. Programs exist to recruit college and medical students to work in rural areas, but few programs are focused on the high school "pipeline." Medical students, residents and physicians who have lived in rural areas are more likely to practice in those areas. This article describes the development, implementation, and evaluation of a workshop to educate rural high school students about preparing for health professions careers. Evaluations of the workshop were positive and indicated increased knowledge and interest in careers in medicine and health professions. It is somewhat promising that even a brief educational program has the potential to increase interest of rural high school students to pursue medical or health professions careers, and perhaps ultimately increase the number of those practicing in rural areas. The authors discuss limitations and suggest changes for future workshop presentations.

The impending physician shortage in the United States is well documented (American Association of Medical Colleges, 2019; Knight, 2019; Howley, 2018) and often becomes evident to individuals when trying to locate a doctor who is accepting new patients, or when there is a long wait to schedule an appointment. The physician shortage is particularly evident in rural areas. A Merritt Hawkins White Paper in 2018 reported that 20% of the US population live in rural areas, but only 9% of US physicians practice there. A 2019 report from the National Rural Health Association stated that the ratio of primary care physicians to patients in rural areas was 39.8 physicians per 100,000 people, compared to 53.3 physicians per 100,000 people in urban areas; individuals in rural areas have a 22% higher risk of injury-related death compared to individuals in non-rural areas. It appears that the shortage of doctors in rural areas is likely to result in healthcare disparities, i.e., "…delays in getting care, poor continuity of care, lack of specialty services [and] lack of patient education" (Merritt Hawkins, 2018).

The severity of the problem has been acknowledged and there have been some efforts to initiate change. A 2013 University of Colorado Policy Brief (Deutchman, 2013) states that 35 rural track medical school programs existed or were planned at that time to increase exposure of medical students to rural healthcare, with the goal to encourage future practice in these areas. Many of these rural track programs offered at medical schools across the country include classroom seminars focusing on issues in rural healthcare, pre-clinical summer experiences and/or clinical clerkship and elective experiences in rural areas. While some of the programs existed for many years, e.g., the first program identified in the Policy Brief was at the University of Kansas School of Medicine which began in 1951, more than half were created in the past 15 years. Many of these programs share similar goals to that of the Rural Health Scholars program at Dartmouth Geisel School of Medicine in New Hampshire, "…to serve as a source of mutual support and encouragement for pursuing a career in rural medicine" (Geisel School of Medicine, 2019; Florida State University, 2019; Indiana University, 2019; Tulane University, 2019; The University of Alabama, 2019; West Virginia University, 2019).

There have been studies to indicate that medical students who have grown up in rural areas are more likely to practice medicine in rural communities (Feldman, et al., 2008; Royston, et al., 2012). There are "pipeline programs" to enhance preparation for students who may be unprepared to enter medical school; some exist to prepare college students who have grown up in rural areas, e.g., the "Leadership in Rural Medicine Pipeline Program at Michigan State University, the "Mississippi Rural Physicians Scholarship Program" at the University of Mississippi, and the "Rural Track Pipeline Program" at the University of Missouri (Michigan State University, 2019; The University of Mississippi, 2019; University of Missouri, 2019). Undergraduate students at the University of Missouri apply to the

pipeline program, are provided mentoring and support, and commit to the MU Rural Scholars Program during their medical education; 68% of students who graduate from this program practice in a rural setting (University of Missouri, 2019). Despite these programs, the shortage of doctors practicing in rural areas has remained problematic.

The American Association of Medical Colleges (AAMC) reported in 2016 that medical schools were also developing programs for middle and high school students, to engage them as early as possible with experiences and mentorship and give them a better chance of gaining acceptance to medical school (Warshaw, 2016). These efforts follow initiatives of long- standing, e.g. "Project Lead the Way—PLTW" (Website: https://www.pltw.org), a nonprofit organization that for 20 years has been providing "transformative learning experiences" implemented in classrooms Pre-K through high school offering "curriculum frameworks that identify learning objectives aligned to the skills employers desire" in computer science, engineering and biomedical science. The 4-year high school Biomedical Sciences curriculum serves to encourage high school students to consider careers in medicine. PLTW and the College Board are now partnering on a program to encourage students to participate in science, technology, engineering, and math (STEM) courses and to build interest in STEM degrees and careers. The success of these programs is multi-factorial and therefore difficult to quantify. However, the reality is that these excellent initiatives are not available to all high school students and are unlikely to be implemented in schools with limited resources, including many in rural areas. It has been shown that students who have sustained access to high-quality college guidance and career counseling services provided by well-trained professional school counselors have greater success in enrolling in and completing college (Poynton and Lapan, 2017). Identifying and the cost of hiring a sufficient number of school counselors may also impede rural high school students from pursuing medical and health professions careers.

Therefore, the goal of this project was to create an educational workshop as an addition to other college counseling experiences offered to rural high school students, to provide students with information and opportunities early to encourage them to pursue a medical/health professions career, and to connect with a role model. The specific idea to design a motivational workshop for high school students emanated from the personal experience of the lead author who graduated from a rural New Hampshire high school and at the time of presentation was a medical student. Even though her thoughts of becoming a physician started at a young age, she received limited guidance toward pursuing her desired career, and therefore entered college with little information about what was necessary to study medicine and become a physician. This article describes her efforts to create a workshop to educate rural high school students about careers in medicine and other health professions, and to provide guidance to show students that these careers are attainable. The workshop was designed to motivate and encourage students to begin the journey to learn more about a possible career, and to specifically set individual/personal short- and long-term goals.

Project Design and Workshop Description

An interactive workshop was designed with learning principles in mind to engage high school students (Swiderski, 2011). A PowerPoint presentation served as an organizing mechanism that included important information and set the framework for further discussion. At the conclusion of the workshop students were expected to be able to: State major steps from high school to a career in medicine and other health professions; compare education requirements for various careers in medicine and other health professions; and create a personalized plan for achieving a career goal.

The workshop was presented in December 2018 at a high school in New Hampshire which encompasses two rural towns with populations of approximately 5,000 and 9,000 (New Hampshire, 2018). A total of 50 students in all four years of high school were able to participate in one of three workshops. Student selection was based on the classroom teachers' willingness to devote one class period (45-minutes) to the activity, and consequently, students enrolled in Honors and AP Biology, Chemistry, and Human Anatomy and Physiology participated. The workshop presenter engaged the class interactively, asking students about their knowledge of each topic before displaying the information on a slide. For example, the presenter asked, "Can someone tell us what a physical therapist does?" then waited for responses, and finally summarized showing slides describing the tasks and training for a physical therapist. Students also engaged in an interactive "snowballing" exercise.

They were first asked to think about personal goals, then discuss these with one peer partner, next share with a group of four students, and finally present goals to the class. To review, students worked together in groups of 2-4 to discuss knowledge questions posed on the PowerPoint, e.g. "How many years of training is medical school? Average age of an accepted medical student? Which medical career requires only a 4-year college degree?" At the conclusion of the workshop, students were able to ask questions of the presenter. The slide presentation included information on the following topics:

1. Description of the severity of the rural physician shortage including specific facts about rural New Hampshire.
2. Description of health profession career options including length of training and information about the required entrance exams. Careers discussed were Registered Nurse (RN), Physical and Occupational Therapist (PT and OT), Physician Assistant (PA) and Pharmacist (PharmD). Pursuing combined degrees was also discussed.
3. Description of the traditional path to becoming a medical doctor, including medical school admission requirements (prerequisite courses and the Medical College Admissions Test (MCAT)) and activities commonly engaged in, e.g., shadowing a physician, volunteering, research and taking advanced science classes.
4. Medical School admission statistics of the average accepted medical student in 2018 and the most common majors of accepted medical students.
5. Description of both allopathic and osteopathic medical schools.
6. Suggestions of what to do in high school and college to prepare for a health professions career, e.g., job shadowing, volunteering, engaging in extracurricular activities, taking prerequisite classes, and getting involved in research.

Workshop Evaluation

At the conclusion of the workshop, students completed a nine-question evaluation form (Likert scale, ratings, and open-ended questions). Students rated the following questions on a scale of strongly agree to strongly disagree: "*I valued the opportunity to learn about health professions and medical school," "I have a better understanding of what it might be like to attend medical school or pursue a health profession,"* and *"This program inspired me to pursue medicine or a health profession after high school."* The students also rated the value of the workshop and the session content on a 1 to 5 (poor to excellent) scale. The open-ended response questions included: "*What did you like best about the workshop? What changes would you make to the workshop? What other questions do you still have about health professions? What activities are you considering starting on your journey toward your desired career? What do you wish to accomplish in the coming years?"* The Likert scale and rating question responses were analyzed to determine what percentage of students selected each of the response options. The open-ended questions were analyzed qualitatively for common themes by the two authors; there was no discrepancy among the authors on any of the responses. This project was approved by the Rutgers University Institutional Review Board.

Outcomes

As the last activity of the workshop, student participants asked questions of the presenter. Questions related to the presenter's personal experiences along her journey from high school to medical school, e.g. about her achievement and activities in high school, what college she attended, and did she have any challenging experiences, how and why she chose medical school, etc. Other questions were focused on the content of the workshop, e.g. the cost of schooling, and the salaries associated with various health professions careers.

Likert scale question responses from the Workshop Evaluation indicated that 96% of the students valued the opportunity to learn about health professions and medical school. All (100%) of students agreed that they had a better understanding of what it takes to pursue a health career. Over half of the students (54%) agreed that this workshop inspired them to pursue a health profession after high school. Students liked the opportunity to learn more about careers in the medical field and how they could start their journey toward one of those careers: 82% of students rated the content of the session as excellent or good and 75% of students rated the overall value of the session as excellent or good.

Responses to the question, "What did you like best about this workshop?" were classified into themes: (1) Learning about career options within the

health professions, e.g., "*Learning about the different careers in the medical field*;" "*There was a lot of information about the different career paths*;" "*It was very informative about the schools and processes people go through*;" (2) Learning about admission requirements for health professions, e.g., "*I liked hearing about the course requirements and recommendations*; "*…what classes to take and how many years after high school you'd have to go to school*;" (3) Learning specifically about medical school, e.g., "*I learned a lot about medical school and what it requires*;" " *…all of the statistics and logistics of going to medical school so everyone could see how it would affect their future*;" and (4) Workshop being presented by a rural medical student, e.g., "*How you told us what you went through and things you think we should do that you didn't*;" " *I liked how she was from JS* [high school where the workshop was presented] *and could relate to us. It made it more meaningful*."

Students were asked to list two activities they were thinking about to start the journey towards their career. These fit into the following categories: (1) Job shadowing or career exploration, e.g., "*Shadowing an RN*;" "*Shadow a dental hygienist*;" (2) Volunteering, e.g., "*Volunteer at a doctor's office*;" "*Volunteer at a nursing home*;" (3) Taking advanced science classes, e.g., "*Honors classes. AP classes*;" and (4) Seeking research experiences, e.g., "*Taking advantage of research opportunities*."

The final question posed to the student participants was "What do you wish to accomplish in the coming years?" Responses were as expected: (1) To attend/graduate college, e.g., "*I want to graduate with straight A's and get accepted into my top 3 colleges*;" "*Get a college degree and pursue my desired career*;" "*…get through college and prepare for med school*;" "*Graduate HS and college to become an RN*; "*…vet school*;" or (2) To work in a medical profession, e.g., "*Becoming either a pediatrician or physician's assistant*;" "*I want to be an occupational therapist*;" "*Be a doctor*;" "*…be a nurse practitioner*;" "*Pediatric nurse practitioner*;" "*…RN…NP…neonatal NP*."

Reflections

Overall, student responses indicated that the majority of students who participated in the workshop enjoyed the experience and learned from it. Our workshop objectives were achieved for many students, including getting them to think about actions they can initiate during high school to move toward careers in medicine and the health professions. Our reflections consider student suggestions and our own observations for improving the workshop. These include changes to both the content and format of the workshop which we believe will further enhance the learning experience for students.

Content

Revision of the workshop content will include more information about a variety of health professions careers, e.g., Dentist, Dietician, Respiratory Therapist, Nurse Practitioner, Midwife, Optician and Podiatrist. We will include information about salary ranges for all the health professions as students asked for more information regarding compensation, stress and lifestyle considerations related to the journey to medical school and other health professions. These student-suggested topics seem to indicate interest in identifying careers that provide positive lifestyles, and interestingly, mirror the desire of young physicians to have more balanced lifestyles, as indicated in a study conducted by the American Medical Association which reported that 92% of physicians under the age of 35 acknowledged the importance of having a balance between work and personal or family life (Miller, 2017). Other topics to be added to the workshop content are average tuition costs and average student loan debt for those pursuing education for careers in medicine and the health professions, and more personal anecdotes related to the presenter's journey to medical school and to her life as a medical student, e.g., how she chose her future career as a physician, what extracurricular activities she participated in or wished she had participated in during high school, college and medical school, and more generally what life was like as a medical student.

Format

We would welcome the possibility of increasing the time allotted for the workshop to enable the addition of topics and more time for discussion. This was considered but not possible because of the time constraint of 45-minutes determined by the length of a high school instructional period. Alternatives might be to use a double class period, presenting the workshop in two parts on consecutive days, presenting the workshop as a podcast using media to enhance the presentation, or presenting as an online

distance learning experience with a presenter-moderated discussion. Transforming the workshop into a podcast or an online distance learning experience will be considered to enable the expansion of this project and perhaps to further adapt to the learning style of the target audience (Barnes et al., 2007).

Limitations

This workshop was presented just once to 50 students in one high school located in a rural area of New Hampshire. The science classes were attended by students in all 4 years—and no attempt was made to compare the usefulness of the material to students at different levels. Is the material more interesting to juniors and seniors who are already thinking of life after high school? Or is it better to target freshmen and sophomores who have years to engage in preparatory activities? How should the workshop be tailored and presented in the future so students receive the most benefit? We look forward to updating this presentation and repeating it again in the same school—but also making it available to students at high schools in rural areas across the country, a task certainly more feasible with an online presentation. There is also the question of the lasting effects of a one-time learning experience. Ideally, students who received workshop training could be compared at different times (e.g. high school graduation and beyond) with students who did not have this opportunity, but realistically this would entail a larger number of participants in a more robust study.

Summary

The model of having a medical student, physician, or other health professional with a similar background (the experience of growing up in a rural area) present information about careers to rural high school students appeared to be helpful and appreciated by students. One student actually wrote, "*I liked how she was from* [the same high school as me] *and she could relate to us. It made it more meaningful*." It was encouraging that the students seemed to express high aspirations as they indicated future goals. There is clearly the opportunity and need to continue educating rural high school students about the benefits of health profession careers and the paths towards achieving those careers. Increasing opportunities for counselling and encouraging rural students to attend medical school will hopefully impact the long-term goal of resolving the rural physician shortage.

References

American Association of Medical Colleges. (2019, April 23). *New findings confirm predictions on physician shortage. AAMCNews*. https://news.aamc.org/press-releases/article/2019-workforce-projections-update/

Barnes, K., Marateo, R.C. & Ferris, S.P. (2007). Teaching and learning with the net generation. *Innovate: Journal of Online Education*, *3*(4). https://www.learntechlib.org/p/104231/

Deutchman, M. (2013, September). *US medical school rural track policy brief.* University of Colorado Denver School of Medicine. https://www.ruralhealthweb.org/NRHA/media/Emerge_NRHA/PDFs/RTPolicyBrief91513final.pdf

Feldman, K., Woloschuk, W., Gowans, M., Delva, D., Brenneis, F., & Wright, B. (2008). The difference between medical students interested in rural family medicine versus urban family or specialty medicine. *Canadian Journal of Rural Medicine*, *13*(2). https://link.gale.com/apps/doc/A178219583/PPNU?u=new67449&sid=PPNU&xid=4756b3c9

Florida State University. (2019). Marianna rural program. *Florida State University College of Medicine.* https://med.fsu.edu/marianna/home

Geisel School of Medicine. (2019). *Rural health scholars: The program.* https://geiselmed.dartmouth.edu/rhs/program/

Howley, E. K. (2018, May 2). What can be done about the coming shortage of specialist doctors? *U.S. News & World Report*. https://health.usnews.com/health-care/patient-advice/articles/2018-05-02/what-can-be-done-about-the-coming-shortage-of-specialist-doctors

Indiana University. (2019). *Rural health scholarly concentration.* Indiana University School of Medicine. https://medicine.iu.edu/education/md/curriculum/scholarly-concentrations/rural-health/

Knight, V. (2019, July 15). America to face a shortage of primary care physicians within a decade or so. *The Washington Post*. https://www.washingtonpost.com/health/america-to-face-a-shortage-of-primary-care-physicians-

within-a-decade-or-so/2019/07/12/0cf144d0-a27d-11e9-bd56-eac6bb02d01d_story.html
Merritt Hawkins. (2018). Rural physician recruiting challenges and solutions. https://www.merritthawkins.com/Rural-Physician-Recruiting-Challenges-and-Solutions/
Michigan State University. (2019). Leadership in rural medicine pipeline program. http://msururalhealth.chm.msu.edu/index.php/pipeline-program
Miller, R. N. (2017, March 27). Millennial physicians sound off on state of medicine today. *American Medical Association.* https://www.ama-assn.org/practice-management/physician-health/millennial-physicians-sound-state-medicine-today
National Rural Health Association. (2019). About rural health care. https://www.ruralhealthweb.org/about-nrha/about-rural-health-care
New Hampshire Demographics. (2018). *New Hampshire Cities by Population.* http://www.newhampshire-demographics.com/cities_by_population
Poynton, T.A. & Lapan, R.T (2017, October 15). Aspirations, achievement, and school counselors' impact on the college transition. *Journal of Counseling & Development*, *95*(4), 369-377. https://doi.org/10.1002/jcad.12152.
Project Lead the Way. (2019). *Project Lead the Way, Inc*. https://www.pltw.org
Royston, P., Mathieson, K., Leafman, J., & Ojan-Sheehan, O. (2012). Medical student characteristics predictive of intent for rural practice. *Rural and Remote Health,12*(2107), 1-10. https://www.rrh.org.au/journal/article/2107
Swiderski, S. (2011). Transforming principles into practice: Using cognitive active learning strategies in the high school classroom. *Clearing House*, 84(6), 239–243. https://doiorg.proxy.libraries.rutgers.edu/10.1080/00098655.2011.590549
Tulane University. (2019). *TRuMEd program.* https://medicine.tulane.edu/departments/family-community-medicine/academic-programs/trumed-program
The University of Alabama. (2019). *Rural programs*. The College of Community Health Sciences. https://cchs.ua.edu/rural-programs/
The University of Mississippi. (2019). *Mississippi rural physicians scholarship program.* https://www.umc.edu/Office%20of%20Academic%20Affairs/For-Students/Academic%20Outreach%20Programs/Mississippi%20Rural%20Physicians%20Scholarship%20Program/Mississippi%20Rural%20Physicians%20Scholarship%20Program.html
University of Missouri. (2019). Bryant scholars pre-admissions program. *University of Missouri School of Medicine.* https://medicine.missouri.edu/admissions/bryant-scholars-pre-admissions-program
Warshaw, R. (2016, September 29). Priming the medical school pipeline: Schools reach out to teens in minority and underserved communities. *AAMCNews*. http://msururalhealth.chm.msu.edu/index.php/pipeline-program
West Virginia University. (2019). Rural track program. *West Virginia University School of Medicine.* https://medicine.hsc.wvu.edu/rural

Authors:

Morgan Cari Dunn is currently a first-year resident in the Obstetrics and Gynecology department at Rutgers Robert Wood Johnson Medical School. Contact: mcd189@rwjms.rutgers.edu

Norma Susswein Saks is Professor Emerita at Rutgers University. She was formerly Assistant Dean for Educational Programs and Director of the Cognitive Skills Program at Rutgers Robert Wood Johnson Medical School. Contact: nss42@rwjms.rutgers.edu

Suggested Citation

Dunn, M. C. & Saks, N. S. (2020). Inspiring rural high school students to consider careers in medicine and the health professions. *The Rural Educator, 41*(2), 64-69. https://doi.org/10.35608/ruraled.v41i2.867