Canadian Journal of Rural Medicine
CJRM CMR
Journal canadien de la médicine rurale

Original Article
Article original

Medical school outreach and mentorship for rural secondary school students: a pilot of the Southwestern Ontario Medical Mentorship Program

Maija A. Robinson, BSc
Faculty of Medicine, University of Ottawa, Ottawa, Ont.

Matt B. Douglas-Vail, BSc
Jessica N. Bryce, BSc
Theunis J. van Zyl, BSc
Schulich School of Medicine and Dentistry, Western University, London, Ont.

Correspondence to: Theunis van Zyl, tvanzyl2018@meds.uwo.ca

This article has been peer reviewed.

Introduction: Rural communities in Canada face challenges with physician recruitment. Physicians from rural backgrounds are more likely to practise in rural areas; however, rural students are underrepresented in medical schools. To address this, the Southwestern Ontario Medical Mentorship Program (SWOMMP) was created to expose rural secondary school students to medical careers.
Methods: This pilot project involved a school-based interactive session run by rural medical students on paths to medicine, medical specialties and skills workshops of roughly 2.5 hours targeted to grades 10–12 university-level students in rural southwestern Ontario. Two sessions were held, 1 in a town with a population of 20 000 and the other in a town with a population of 5000. A survey was administered before and after the session to assess changes in interest in medical careers and in perceived barriers.
Results: Forty-five students participated in the sessions. After the sessions, 32 students (71%) were considering a career in health care, compared to 26 (58%) before the sessions. Almost all students (43 [96%]) found the session helpful or extremely helpful, and all reported they would recommend it to other classes. Finances, grades and length of schooling were the most commonly perceived barriers to pursuing a career in medicine; fewer students had concerns about finances and length of schooling after the sessions. Twenty-nine students (64%) enrolled in longitudinal mentorship with a medical student.
Conclusion: This pilot project showed that a rural secondary school outreach program run by medical students can increase high school students' interest in medical careers. The project will continue and aims to expand and improve using the pilot study's data.

Introduction : Les régions rurales au Canada ont de la difficulté à recruter des médecins et les médecins qui viennent eux-mêmes de milieux ruraux sont plus susceptibles d'exercer en région rurale. Cependant, les étudiants de régions rurales sont sous-représentés au sein des écoles de médecine. Pour aborder ce problème, le programme SWOMMP (Southwestern Ontario Medical Mentorship Program) a été créé afin de présenter des carrières en médecine aux élèves du secondaire de régions rurales.
Méthodes : Le projet pilote comprenait une séance interactive en milieu scolaire d'une durée d'environ 2.5 heures tenue par des étudiants en médecine de milieux ruraux. Les séances portaient sur le cheminement de carrière d'un médecin généraliste ou d'un médecin spécialiste et des ateliers sur les compétences ciblant les élèves de 10e, 11e et 12e année de régions rurales du sud-ouest de l'Ontario qui envisagent poursuivre des études universitaires. Deux séances ont été organisées, l'une dans une ville de 20 000 habitants et l'autre dans une localité de 5000 habitants. Un

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sondage a été mené avant et après la séance pour déterminer les changements d'intérêt pour une carrière de médecin et des obstacles perçus.
Résultats : Quarante-cinq élèves ont participé aux séances. À la suite de celles-ci, 32 élèves (71 %) envisageaient une carrière en soins de santé, comparativement à 26 (58 %) avant les séances. Presque tous les élèves (43 [96 %]) étaient d'avis que la séance leur avait été utile ou extrêmement utile et tous les élèves ont signalé qu'ils la recommanderaient aux élèves d'autres classes. Les ressources financières, les résultats scolaires et la durée des études étaient les obstacles perçus les plus courants à la poursuite d'une carrière de médecin. Moins d'élèves se préoccupaient des ressources financières et de la durée des études à la fin des séances. Vingt-neuf élèves (64 %) se sont inscrits à un mentorat longitudinal auprès d'un étudiant en médecine.
Conclusion : Le projet pilote a permis de démontrer qu'un programme d'approche des écoles secondaires rurales, dirigé par des étudiants en médecine, peut accroître l'intérêt des élèves du secondaire pour une carrière en médecine. Le projet se poursuivra dans un but d'expansion et d'amélioration à l'aide des données de l'étude pilote.

INTRODUCTION

Rural communities in Canada face unique challenges in access to, and provision of, medical services, such as physician recruitment and retention. It is well described in the literature that physicians from rural backgrounds are more likely to practise in rural areas.[1,2] However, students from rural areas are significantly underrepresented in medical schools: although 22.4% of Canadian high school students are from rural areas, only 10.8% of medical students in this country come from rural areas.[3] This is most likely due to the fact that rural students are only 56% as likely to apply to medical school as urban students, even though there is no difference between the 2 groups in grade point average or Medical College Admission Test scores.[4]

Potential reasons for this disparity are the many barriers to entry specific to this population, including lack of exposure to medicine as a career, lack of medical role models, distance from academic centres and lack of the support services and programs in urban areas that help students to participate and excel in extracurricular activities — an important part of university and medical school applications.[5]

Another major barrier is the inadequacy of medical school and government outreach strategies to improve rural student recruitment.[1,3,5] Although many programs exist to recruit university students from rural backgrounds to medical school,[6,7] these programs often capture students who have long intended to go to medical school and who would most likely apply, even if such programs did not exist. Few, if any, programs aim to increase the number of rural students attending university with an interest in pursuing medicine. Thus, recruitment programs potentially draw on a motivated pool of rural applicants without increasing the size of the rural applicant pool in university.

The recommendations of the Society of Rural Physicians of Canada to increase rural medical student enrolment suggested that an increase in the number of rural high school students going to university with an interest in medicine as a career was necessary.[5] The society recommended the establishment of high school outreach programs for rural students involving medical students to address this problem.[5]

In response to the underrepresentation of rural students in medical schools and the recommendations of the Society of Rural Physicians of Canada, we created a pilot outreach program that sent medical students back to their home communities and high schools in rural southwestern Ontario. Our primary objective was to expose secondary school students to medical education and careers. The hope was to show current secondary school students that students from their schools had gone into medicine and thereby highlight medicine as an achievable career. The secondary objectives were to foster interest in medicine as a career, develop a longitudinal mentorship program by medical students for interested high school students, determine the effectiveness of the pilot program and collect data for its improvement.

METHODS

The pilot project was created by medical students from the Schulich School of Medicine and Dentistry

at Western University and the University of Ottawa Faculty of Medicine. It involved designing and implementing school-based interactive sessions of roughly 2.5 hours targeted to grade 11 and 12 university-level students in southwestern Ontario. Sessions were run by medical students who had lived in the communities and had graduated from the secondary schools where the sessions were held. Initially, for convenience reasons, medical students involved in running the sessions were those involved in designing the outreach program. The medical students hosting the sessions contacted former teachers, specifically biology teachers, at their alma mater and arranged for dates to present the pilot project to students at the school. The program was called the Southwestern Ontario Medical Mentorship Program (SWOMMP).

Sessions included the following: a 5-minute introduction of the medical students; a 20-minute "What is Medicine and Why to Do It" talk about different medical specialties (what the specialists do and why it is a rewarding career); a 20-minute "Paths to Medicine" talk on the process of applying to medical school and the path through medical school and residency and ultimately becoming a physician; a 30-minute medical school lecture on basic cardiac pathology and the cardiac physical examination; a 30-minute interactive heart auscultation workshop teaching students how to use the stethoscope and identify heart sounds, integrating the didactic lecture with hands-on skills; a 30-minute workshop on the basic tools and techniques of suturing; and a 15-minute question-and-answer session with a mentorship focus during which the medical students' contact information was distributed to create long-term mentorship relationships for interested students, to help them during their university careers and potential medical school applications in the future.

Schools that participated in this initial pilot were chosen by convenience sampling. All students present on the presentation day who were enrolled in grade 10–12 university-level science or biology courses were eligible.

Surveys were administered before and after the session to assess program effectiveness and changes in students' perceptions, and to improve the program for future sessions. Questions in the survey were developed with the use of common themes in literature such as previously documented barriers in accessing medical education.[5] The surveys collected both quantitative and qualitative data.

We obtained detailed demographic characteristics to assess correlation of demographic factors and outcomes. Outcomes measured were changes in students' self-reported interest in health care careers, interest in a career as a physician, perceived barriers to medical school and a career as a physician and students' opinion of the helpfulness of the sessions. Content analysis approach with a primarily qualitative analysis was used. Closed-ended questions were quantified and tallied, and open-ended questions were coded and grouped with like responses.

Ethics approval

This study was exempt from ethics approval according to the guidelines set out by the Western University Research Ethics Board. However, we considered ethical issues in the study design using the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2). Consent was obtained from all students participating in the session and surveys, and students had the ability to withdraw from the session or surveys at any time. Strict privacy and confidentiality were maintained in data collection. Student responses were collected anonymously, without personal or identifying data on the surveys. Responses were amalgamated, and only cumulative data are presented.

RESULTS

The SWOMMP pilot project involved 2 sessions run by 2 medical students, 1 at a secondary school in a town with a population of 20 000, and the other at a secondary school in a town with a population of 5000. Towns were located more than 180 km from the nearest academic medical centre. The program was extremely well received by both the students and staff of the schools. Staff indicated a willingness to have their classes participate in future years of the program.

Forty-five students ranging in age from 15 to 19 (mean 17) years in grades 10 through 12 participated in the sessions and completed anonymous pre- and postsession surveys (Table 1), with 100% participation. The classes were of a pre-university level, and 44 respondents (98%) reported that they intended to pursue a university-level postsecondary education. Thirty-nine students (87%) had parents with a postsecondary school education or higher. No students reported having an immediate family

Table 1: Demographic characteristics of students participating in 2 sessions of the Southwestern Ontario Medical Mentorship Program

Characteristic	All students (*n* = 45)	Location: Small town (*n* = 34)	Location: Large town (*n* = 11)
Age, mean ± SD, yr	17.0 ± 1.0	16.8 ± 1.0	17.5 ± 0.8
Population of hometown	–	5000	20 000
Planned to attend university, no. (%)	44 (98)	33 (97)	11 (100)
Parents had postsecondary education, no. (%)	39 (87)	29 (85)	10 (91)
Extended family member is physician, no. (%)	9 (20)	8 (24)	1 (9)

SD = standard deviation.

member who was a physician, although 9 (20%) had an extended family member in medicine.

Following the session, the number of students who reported that they would consider a career in the health care field increased from 26 (58%) to 32 (71%) (Table 2). The number of students who reported that they would consider a career as a physician increased from 17 (38%) to 20 (44%) (Table 2). More notably, the number of students reporting no interest in a career as a physician decreased by half after the session, from 14 (31%) to 7 (16%). All of the students reported that they would recommend the session to future classes, with 31 students (69%) highly recommending it. Twenty-six students (58%) rated the session as extremely helpful, and 17 (38%) rated it as helpful. Only 2 students (4%) rated it as neutral, and no students rated it negatively.

Before the session, finances and costs, grades and length of schooling were the most commonly reported perceived barriers to pursuing medicine (Fig. 1). Grades remained an equally prevalent factor following the session, but all other factors were reported less frequently (Fig. 1). Most notably, no student reported lack of knowledge about how to pursue medicine as a barrier after the session.

Students stated that they would have liked more information regarding different specialties, skills acquisition, the medical school curriculum and other fields in health care (Fig. 2). Finally, 29 students (64%) reported that they would like to be involved in longitudinal mentorship with a medical student.

Table 2: Number of students interested in or considering a career in health care or as a physician before and after SWOMMP session

Variable	Response; no. (%) of students (*n* = 45)*: Yes	No	Neutral
Considering career in health care			
Before SWOMMP	26 (58)	8 (18)	9 (20)
After SWOMMP	32 (71)	4 (9)	7 (16)
Considering career as physician			
Before SWOMMP	17 (38)	14 (31)	12 (27)
After SWOMMP	20 (44)	7 (16)	16 (36)

SWOMMP = Southwestern Ontario Medical Mentorship Program.
*Data missing for 2 students.

DISCUSSION

Some of the objectives of this study included assessing the effectiveness and viability of the pilot project, and gathering data for improving and eventually expanding the program. By sharing the knowledge acquired we hope to encourage the creation of similar programs by other medical students from across Canada.

Overall, the pilot program was successful, as gauged by how it was received by students and staff, and invitations to host future sessions. Almost all students in the study found the session helpful, and all indicated they would recommend the session to future classes, which suggests that it was informative and engaging, even for students not planning to pursue careers related to health care. Building a program that students found helpful and would recommend to their peers was important to allow for invitations to return to the schools and to ensure student engagement. These preliminary results suggest that SWOMMP provided a useful outreach program that gave secondary students a better understanding of pursuing a career in medicine.

In addition, the project appeared to be successful in increasing interest in medicine as a career. Reported rates of interest in health care and medi-

cal careers increased after the session, and the number of students with no interest in medicine decreased by 50%. While this interest may be short-lived in many students, generating early interest and knowledge of the application process will leave those who do want to go to medical school better prepared. The long-term hope is that the program will prevent perceived barriers, lack of knowledge about the process and late discovery of medical interest from discouraging rural students from applying to medical school. However, as a pilot project, this study assessed whether the program is able to increase interest at all, even if transiently. We hope longer-term interest will be maintained through the longitudinal mentorship program.

In our study, as also reported in the literature,[3] financial considerations were the most frequently perceived barrier to attending medical school. During the session, the medical students discussed the wide variety of funding options, bursaries and financial aid available, which appeared to alleviate some of the concern about finances, as 53% of students perceived finances as a barrier after the session, compared to 82% before. SWOMMP was also able to completely eliminate the lack-of-knowledge barrier students saw to attending medical school as well as ease concerns about the length of schooling. Future improvements will aim to build these concerns into the program and address them for students.

The pilot project was also successful in establishing interest in a mentor network for students as they go on to university. About two-thirds of students requested to be involved in longitudinal mentoring and were given a medical student's contact information for any questions they had or general guidance as they go through university. However, the program at this stage is still in its infancy. As SWOMMP continues to expand, the goal is to have a more formal mentor network. Mentors would give a yearly school workshop and meet with an assigned mentee once a year to touch base, in addition to offering long-distance guidance during the year. Surveys will continue to be distributed for program improvement and metric tracking over time. Once the program is more established, the hope is to assess the viability of the program and mentorship in increasing medical school enrolment by rural students.

As the program continues year to year, longitudinal data on students' education and career paths will be collected. Rural students' interest in medicine and success in applying to medical school will be captured through the longitudinal mentorship program. Future studies will assess the success of the program in these areas.

Limitations

The main limitation of this study is that it is a single measurement of student interest at one point in time, without follow-up. This limitation was beyond the scope of the study. It was designed as a

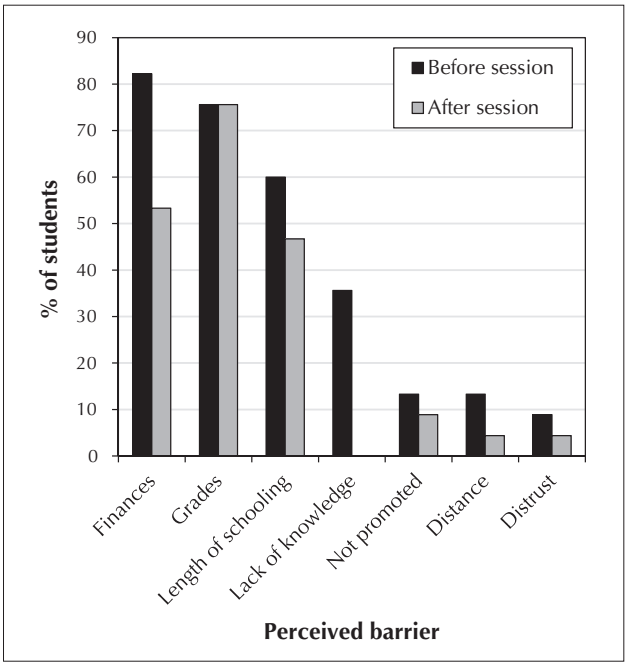


Fig. 1. Students' perceived barriers to medical education and careers.

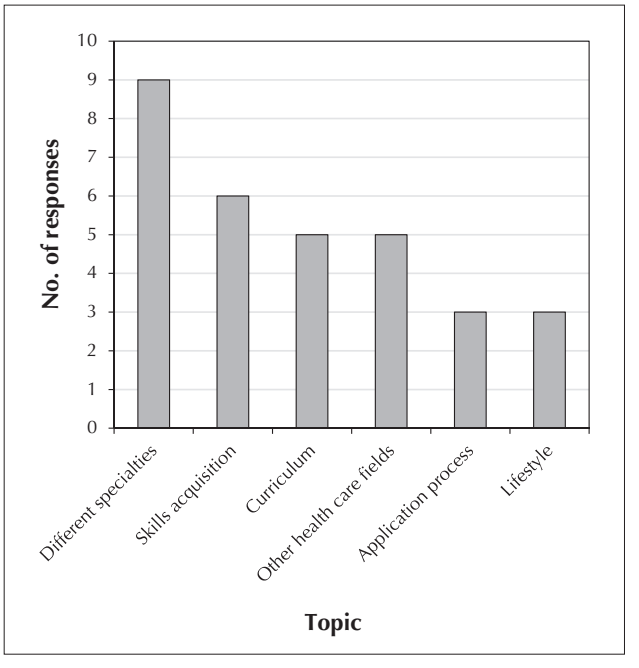


Fig. 2. Topics students would like to learn more about in future outreach sessions.

pilot project to assess the viability of SWOMMP and its ability to increase interest in medicine as a career, even if just transiently. In this respect, the pilot study was successful. Future work is planned to address the limitation and the large gap between our results and the ultimate goal of SWOMMP: to increase the number of rural medical students and, it is hoped, access to physicians in rural areas.

Other limitations include a small sample, self-reported data and the convenience sample of alma mater schools and medical students, which introduced potential bias into the results. We hope to address these limitations by expanding SWOMMP to more schools.

CONCLUSION

The SWOMMP pilot project showed the viability of a rural secondary school mentorship and outreach program run by medical students. More students reported an interest in medicine after the program, and the majority of students requested to participate in longitudinal mentorship. We will use the data and information gained in this pilot study to improve the content of the program and tailor it toward student concerns and interests. The project will continue yearly in rural southwestern Ontario communities and aims to expand in size, geographic area and longitudinal follow-up.

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Competing interests: None declared.

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