Innovations in Family Medicine Education

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Editor's Note: Send submissions to jfreeman3@kumc.edu. Articles should be between 500–1,000 words and clearly and concisely present the goal of the program, the design of the intervention and evaluation plan, the description of the program as implemented, results of evaluation, and conclusion. Each submission should be accompanied by a 100-word abstract. Please limit tables or figures to one each. You can also contact me at Department of Family Medicine, KUMC, Room 1130A Delp, Mail Code 4010, 3901 Rainbow Boulevard, Kansas City, KS 66160. 913-588-1944. Fax: 913-588-2496.

Teaching Medical Students Research While Reaching the Underserved

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Objectives: *This study's objective was to develop and evaluate the effectiveness of a 9-week summer training program for teaching medical students research, while performing community-based participatory research in an underserved area.* Description: *Interactive didactic sessions familiarized students with research methods. Concurrently, they designed and completed a participatory project with a community mentor.* Evaluation: *Questionnaires were used to assess students' experience with the program, their project, and their mentors. Pretests and posttests assessed students self-perceived understanding of research principles.* Conclusions: *Evaluation indicated that the program increased understanding of the research process and acquainted students with caring for patients in medically underserved communities.*

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Two current medical educational issues are to increase the number of clinician researchers[1] and to improve students' understanding of population health.[2] Medical students who participate in research are more likely to pursue research-related careers,[3-6] and primary care researchers are uniquely placed to conduct population-based studies.[7,8] Yet, there is little literature describing innovative ways to engage students in population-based primary care research. We developed a 9-week summer research training program with a community-based participatory research focus. The program's objectives are to (1) teach medical students how to conduct research, (2) provide them with meaningful educational experiences in community-based settings, and (3) improve health services in vulnerable communities.

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Program Description

The Community Health Fellowship Program (CHFP) introduces medical students to community-based and clinical research during the summer vacation between their first and second year. Students are accepted into the program based on a review of their curriculum vitae and an essay describing their interest and experience in community medicine, research, and working in underserved communities. We first offered the 9-week program in 2002 and have trained 13 students through the summer of 2004. The program allocates approximately 3 weeks to didactic sessions (weeks 1, 2, and 7), 5 weeks to project-related fieldwork, data collection, and analysis (weeks 3–6 and 8), and 1 week to presentations and manuscript preparation (week 9).

Didactic Component

A 12-session Summer Research Institute (SRI) anchors the program, providing students with background knowledge for designing and implementing a community-based research project. Instructors include the project director, physician and nonphysician faculty, reference librarians, and Institutional Review

Board (IRB) personnel. The curriculum is based on materials from the "Just Do It!" research training program for family medicine residencies, delivered through the American Academy of Family Physicians (AAFP) Program Directors Workshops and North American Primary Care Research Group (NAPCRG) preconferences.[9] Students are also introduced to the social determinants of health model, disparities in health outcomes, and the principles and process of community-based participatory research. To teach critical appraisal skills and to increase familiarity with primary care medicine, students participate in a journal club and shadow providers at their community sites.

Project Component

The community projects are designed to improve health care delivery among the underserved—primarily uninsured and low-income individuals. Community partners during the 3-year period have included the public health department, faith-based organizations, the county hospital system, and local nonprofit social service organizations. Examples of projects include the effects of a barbershop intervention on controlling hypertension in African American men, barriers to care for Latino patients with diabetes in a free clinic, and level of disease knowledge in patients with diabetes and hypertension in a primarily South Asian population. Students complete written assignments and present oral project reports during weekly progress meetings. During the final week, students present their findings to the staff at their community site when possible and during a public seminar offered to medical school faculty, staff, and interested community members.

Evaluation/Discussion

We evaluated program effectiveness in two ways. First, students completed a posttest-only evaluation of the program (n=13) consisting of one open-ended question and 14 fixed-response items addressing three broad areas: the overall program, the community project, and the community mentor. During the first 2 years of the program, a 4-point scale was used, ranging from 1 (not favorable) to 4 (very favorable), but during the third year, a 5-point scale was used. For purposes of comparison, the 5-point scale was converted to a 4-point scale in the present analysis. Second, students completed a pretest and posttest evaluation of the research training curriculum using 5-point scales ranging from 1 (not knowledgeable) to 5 (very knowledgeable). Complete surveys are available only for the program's second and third years (n=9).

The results of the evaluation are reported in Table 1. The posttest-only results indicate highly favorable impressions of the mentor, the project, and the overall program, with two items from each of these categories being ranked among the six top items. Items 1 and 6 indicate that the community mentors are able to fully familiarize the students with community medicine and guide them through their research. Items 4 and 5 suggest that the program effectively accomplished its objectives of increasing students' research knowledge and their awareness of community health needs. Finally, items 2 and 3 indicate that students' projects helped them better understand that serving the underserved is an integral part of their future medical careers.

Given students' diverse backgrounds, the curriculum evaluation was not intended as a comprehensive test of fellows' knowledge but, rather, as an assessment of their understanding of general research principles. Many students learned a great deal about the IRB, the research process, and designing a project. Students apparently learned

Table 1

Evaluation of the Mentor, Project, Program, and Curriculum

Component	*Posttest Items (n=13)*	*Mean*
Mentor	1. Mentor professionalism	3.95
Project	2. Relevant to medical career	3.84
Project	3. Acquainted to medically serving underserved	3.84
Program	4. Gained research knowledge	3.81
Program	5. Increased awareness of community needs	3.81
Mentor	6. Mentor guidance	3.78
Project	7. Personally rewarding	3.76
Project	8. Demonstrated local solutions to health problems	3.70
Project	9. Had a direct effect on health of community	3.57
Mentor	10.Mentor time commitment	3.45
Program	11.Well organized	3.26
Mentor	12.Mentor availability	3.26
Program	13.Affected specialty choice	3.04
Program	14.Provided clinical exposure	2.74
Component	***Pretest and Posttest Items (n=9)***	***Mean Change***
Curriculum	IRB procedure familiarity	2.98
Curriculum	Research process familiarity	2.10
Curriculum	Qualified to design project	2.03
Curriculum	Knowledgeable about need for IRB oversight	2.03
Curriculum	Ability to perform literature search	1.58
Curriculum	Succinct research question development	1.40
Curriculum	Explain qualitative versus quantitative research	1.38
Curriculum	Statistical term familiarity	1.38
Curriculum	Understand "validity"	1.33
Curriculum	Understand "reliability"	1.05

IRB—Institutional Review Board

less about statistical and research terms, but many entered the program with relatively high levels of research skills.

In their comments, students stated that they enjoyed the overall program experience. One student commented that:

> (The program) is an extraordinary opportunity for medical students, especially early in their career, to get a taste of community health work in general and, more specifically, the scientific and creative process involved in designing, conducting, and implementing some kind of change in the health of underserved communities.

The few critical remarks included a request for more preparation in using statistical analysis software and a comment on the difficulty of obtaining prompt IRB approval.

Conclusions

In our Community Health Fellowship Program, we successfully instructed medical students in research skills and provided opportunities to participate in a project in an underserved community. The program effectively increased students' research knowledge and highlighted the importance of collaboration in community medicine.

Our model has significant implications for related work because it is applicable to many different settings and populations. Students can work with either urban or rural underserved communities, depending on the medical school's location. The curriculum component provides background knowledge that is fundamental to basic science, clinical, and community-based research. It remains to be seen if our intervention results in increased numbers of students choosing research careers.

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