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Evaluation of an Educational Intervention for Medical Students to Promote Competency in Social and Community Determinants of Health

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Numerous studies indicate that social and community determinants play an extremely important role in explaining widening disparities in health outcomes and health-related behaviors by race, socioeconomic status, gender, and functional status. As part of a competency-based curriculum at Brown Medical School, we developed and evaluated an educational intervention promoting competency in the social and community contexts of health care for medical students within a required family medicine clerkship. Surveys are presented from 14 consecutive six-week clerkship rotations. Results indicated that, at the conclusion of the clerkship, students demonstrated significant self-reported improvements in community and social assessment skills; in the ability to match patients with appropriate community resources; and in knowledge of extant community resources. These data indicated that a competency-based social and community health educational intervention was associated with statistically significant self-reported increases in the acquisition of knowledge regarding the social and community determinants of health.

Key words: medical student education, cultural competence, social and community health

Introduction

Numerous studies indicate that social and community determinants play an important role in explaining widening disparities in health outcomes by race,[1,2] socioeconomic status,[3] gender,[4] and functional status.[5] These determinants also influence health behaviors like tobacco use.[6] Lower socioeconomic status, as measured by income, education, or occupation, is associated with a shorter life expectancy,[7] and higher incidence of cancer,[8] HIV infection,[9] and coronary heart disease.[10] In fact, within societies around the world, health outcomes follow a social gradient such that a lower socioeconomic position is associated with worse health.[11] There is also evidence that lower socioeconomic status is associated with poorer access to health care[12] and higher prevalence of obesity,[13] smoking,[14] and other risk factors associated with coronary heart disease[15] and cancer.[16]

Over the last two decades, medical educators, recognizing the importance of compassionate and effective health care,[17-19] have developed curricula[17,20-29] and evaluation tools[26,27,30,31] to promote and assess cultural competency. Community competency-based curricula have also been disseminated in primary care clerkships and residencies[30,32] and, more recently, efforts have been made to integrate social epidemiology into cross-cultural curricula.[33] However, both (1) undergraduate and graduate medical school programs promoting the integration of cultural, social and community competency and (2) instruments evaluating the knowledge, attitudes, and skills essential to competency have yet to be established and validated, respectively.[33]

In 1983, faculty at Brown Medical School identified a need for a clinical clerkship emphasizing competency in the delivery of community-based primary care and population health. The community health clerkship was implemented with an innovative, competency-based curriculum. The clerkship was successful in promoting a defined skill set for community-oriented primary care and laid the groundwork for a family medicine core clerkship as well as a Community Health curriculum spanning the preclinical and clinical years.[34] In 1985, faculty and students from Brown Medical School engaged in an intensive planning process, culminating in the publication of an "educational blueprint" that represented the foundation of the new curriculum entitled *MD2000*.[35] The rationale underlying the competency-based curriculum stemmed from the need to define the outcomes of the educational process: (1) What are the desirable qualities of a medical school graduate?

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and (2) what constitutes the essential knowledge base that will enable a graduate to make a successful transition to his or her chosen medical field?

With implementation of *MD2000*, all students were expected to gain competency in nine specified abilities and knowledge bases by graduation. Each course within the core curriculum identifies the abilities and parts of the knowledge base it addresses. Students may meet the competency requirements through individualized study, group independent study projects, or through a longitudinal academic interest group beginning in the undergraduate years and continuing into the second year of medical school. Curriculum development and assessment committees consisting of clinical clerkship directors were established within the medical school for each competency. The "level" of competency for each ability was assessed as either "low," "intermediate," or "advanced."

The construct definition of competency and learning objectives for "Social and Community Contexts of Health Care"(Ability VII) are presented in Table 1. In order to facilitate integration of the Ability VII competency into the standing curriculum, in January 2000, the Ability VII Committee began developing an educational intervention through a discrete project within the core family medicine clerkship. All students were required to achieve at least an intermediate level competency in Ability VII through successful completion of a "Social and Community Contexts of Care" project during the family medicine clerkship, which comprised 15% of the final grade. The grades were calculated by a scoring rubrick and include three domains developed by curriculum planners. Criteria for achievement of intermediate competency included: (1) appreciation of the importance of the many non-biologic factors that influence health, disease, disability, and access to care, (2) utilization of appropriate resources in the community that may provide support for reducing social causes of disease, and (3) advocacy in community health promotion. This paper describes the educational intervention in the family medicine clerkship, the development and validation of an assessment tool, and educational outcomes from the intervention from 14 consecutive clerkship rotations from July 2000 through January 2002.

Methods

Educational Intervention

A multidisciplinary committee made up of associate deans and medical educators with clinical and non-clinical backgrounds worked with the director of the family medicine clerkship to develop an educational module that would prepare medical students for the delivery of socially appropriate and community-oriented health care during the clerkship. The educational objectives for the students are listed in Table 1. Curriculum planners were challenged to develop a project that would do justice to the complex issues addressed by Ability VII, yet be brief enough to be planned, developed, and evaluated within the six weeks of the clerkship. Student feedback indicated that they wanted as much specific guidance as possible.

The proposed learning module began with a 50-minute didactic introduction presenting social epidemiological data and describing the objectives and expectations for the project. Students were

Table 1
SOCIAL AND COMMUNITY CONTEXTS OF HEALTH CARE (ABILITY VII)

A. Construct Definition	B. Learning Objectives
The competent graduate provides healing guidance by responding to the many factors that influence health, disease, and disability, besides those of a biological nature. These factors include sociocultural, familial, psychological, economic, environmental, legal, political, and spiritual aspects of health care seekers and of health care delivery. Through sensitivity to the interrelationships of individuals and their communities, the graduate responds to the broader context of medical practice.	Students will: (1) elicit and identify non-biologic factors as part of their routine history-taking and include those issues, as appropriate, in their problem list formulations and management plans, (2) take personal responsibility for discussing these issues with their patients during the clerkship, (3) assess patient needs and match patients to appropriate community services, (4) arrange for referrals to community agencies and assist the patient and the family to navigate through any bureaucratic hurdles, (5) take the initiative to follow-up to see if the arrangements were carried through and offer support and encouragement to the patient and cooperation with the community agency, (6) work with their individual patients and their families to enhance their total well-being, and (7) recognize and respond to the values and perspectives of the community.

asked to identify a health topic with social and/or community determinants that they felt passionate about, search the literature, speak with key informants (e.g., community preceptors), and meet for a group session one week later with the clerkship director to discuss topics and share resources. Each student was asked to identify community resources that addressed his/her selected health issue and propose interventions to improve the health status of patients in their communities. Students were expected to identify a specific family or individual patient affected by the issue. Once such an individual was identified, the student would talk at length with his or her patient or family about community resources available, follow up to assess the value of these resources, and provide continuity for management of socially-mediated health issues. Students were also asked to develop a hypothesis to predict the effect of each proposed intervention that could be tested in the future. Students were scheduled an appointment with the clerkship director one week after the learning module to discuss their topic and plan for the project. In addition, students were given the opportunity to apply for advanced-level competency, which is not part of the family medicine clerkship and requires evidence of advocacy as assessed by a presentation to the assessment committee prior to graduation from Brown Medical School. Finally, each student was asked to develop a one-page community resource handout and give a five-minute Microsoft PowerPoint™ presentation to the class.

Participants

Study participants were third-year medical students (n = 147) at Brown Medical School participating in the family medicine clerkship from July 2000 through January 2002. Questionnaires were anonymous, but did provide information on gender, age, and other general sociodemographic variables.

Survey Instrument

Based on the construct of competency in social and community contexts of health care as described above, a series of questions was developed to examine each of three domains mentioned above: (1) non-biologic determinants of health; (2) community resources; and (3) advocacy. An initial instrument consisting of 30 items was pilot-tested with members of the assessment committee and faculty in the Department of Family Medicine. The questionnaire was revised and shortened to a total of 15 items that the committee determined had both content and face validity. The resulting instrument contained three domains consisting of five questions each, which corresponded to those used as criteria for assessment of intermediate-level competency described above. A computer-scannable questionnaire was used as both a pre-test at the beginning of the clerkship and a post-test on the final day of the clerkship, administered after the student presentations (Table 2). This instrument was not used for grading individual performance

Table 2
QUESTIONS FROM THE SOCIAL AND COMMUNITY HEALTH QUESTIONNAIRE

Domain 1. Importance of Non-Biological Factors
1. How often do you inquire about "non-biological" information in a patient's history with regard to factors that influence health, disease, disability, and access to care?
2. How important do you think these non-biological factors are in influencing health outcomes?
3. How often do you ask patients questions about value systems and lifestyles?
4. How often do you find that your opinions on race, culture, religion, or sexual preferences conflict with those of your patients?
5. How often, when talking with patients, do you try to identify barriers to access of health care resources?
Domain 2. Utilization of Community Resources
6. How familiar are you with community agencies that provide social services for patients?
7. How well do you feel you are matching patients' needs to appropriate community resources?
8. How comfortable are you with communicating the availability of community resources to patients and their families?
9. How often do you arrange referrals to community resources for patients and their families?
10. Do you cooperate with community resources through follow-up efforts and support?
Domain 3. Patient Advocacy
11. Do you try to help patients and families navigate through bureaucracy?
12. Have you supported community activities (e.g., blood pressure screening programs) designed to improve health outcomes?
13. Have you been involved with social and political activities in an effort to improve health outcomes (e.g., lobbying legislature to improve funding for children's health care or advocacy to promote tobacco control)?
14. How often do you feel at odds with balancing you own self-interests (e.g., time management) with patients' concerns?
15. How often do you encourage patients to focus on healthy development of multiple personal dimensions (e.g., physical, social, emotional, spiritual, etc.) in an effort to enhance overall well-being?

For a copy of the scannable form, please contact the first author.

but rather was developed as a tool to conduct research on the overall efficacy of the educational intervention. Written student consent was obtained and the research was approved by the Brown Medical School Institutional Review Board.

Data Collection and Analysis

No personal information was collected. Students were asked to provide anonymous codes for identification in order to match pre-tests with post-tests. Forms were scanned into a database and data were analyzed using SPSS® 10 for Windows (SPSS Inc., Chicago, IL). Likert-type scale scores were analyzed assuming that each score represented interval data and were, therefore, continuous rather than ordinal.[36] Items 1-3 and 5-10 were 5-point scales, while item 4 and items 11-15 were 3-point scales. Mean scores for each item and composite scores for all of the items in each domain on the pre-tests and post-tests were compared using paired-sample *t*-tests.

Results

Seventy-five students were evaluated with pre- and post-test matches over 14 consecutive clerkships from July 2000 through January 2002, representing 51% (75/147) of the students. No personal identifiers were obtained from the survey, but the composition of the clerkships was 57% female and 43% male students. Pooled data from pre- and post-test scores are presented in Table 3.

The composite score for the domain capturing the importance of querying and addressing non-biologic factors in health care increased significantly from the beginning to the end of the family medicine clerkship (mean pre-test score = 17.55, mean post-test score = 18.77 out of possible 23, $p < 0.001$). Within this domain, three of five items demonstrated significant improvement during the clerkship. Specifically, by the end of the clerkship, students reported that they queried "non-biological" information in patients' histories more frequently (mean pre-test score = 3.95, mean post-test score = 4.27 out of possible 5, $p < 0.01$), believed more strongly that these non-biological factors were important in influencing health outcomes (4.48 vs. 4.61, $p < 0.05$), and asked about patients' value systems and "lifestyles" more often (3.28 vs. 3.71, $p< 0.001$). The composite score for the domain capturing competency in identification of and matching patients to community resources also increased significantly from the beginning to the end of the

Table 3

MEANS AND STANDARD DEVIATIONS OF THE REFORM DOMAINS OVER TIME

ITEM	*Pre-Test Mean*	*Post-Test Mean*	*Difference Mean*	*P Value*
Domain I. Importance of Non-Biologic Factors	17.55	18.77	+1.23	**0.000**
1. Frequency of querying non-biologic information	3.95	4.27	+0.32	**0.003**
2. Perceived importance of non-biologic factors	4.48	4.61	+0.13	**0.049**
3. Frequency of querying values & lifestyles	3.28	3.71	+0.43	**<0.000**
4. Personal opinions in conflict with patient's opinions	2.37	2.52	+0.15	0.055
5. Frequency of identifying barriers to health care	3.51	3.65	+0.14	0.206
Domain II. Utilization of Community Resources	13.32	14.70	+1.23	**0.002**
6. Familiarity with community agencies	2.82	3.35	+0.53	**<0.001**
7. Matching patients to community agencies	2.68	3.12	+0.44	**<0.001**
8. Comfort in communicating community resources to patients	3.23	3.37	+0.14	0.316
9. Frequency arranging referrals to community resources for patients	2.53	2.72	+0.19	0.127
10. Follow-up with patients and agencies	2.05	2.32	+0.27	**0.019**
Domain III. Patient Advocacy	10.05	10.23	+0.18	0.372
11. Assist navigation of bureaucracy	1.89	1.92	+0.03	0.760
12. Support community health promotion activities	2.08	2.12	+0.04	0.593
13. Social/political advocacy	1.73	1.62	–0.11	0.145
14. Balancing self-interest & patient concerns	2.03	1.99	–0.04	0.658
15. Multidimensional patient health promotion	2.32	2.58	+0.26	**0.003**

family medicine clerkship (13.32 vs. 14.70 out of possible 25, $p < 0.01$). According to individual items within this domain, students reported that they were more familiar with community resources (2.82 vs. 3.35, $p < 0.001$), more effective at matching patients' needs to appropriate community resources (2.68 vs. 3.35, $p < 0.001$), and more likely to follow-up with patients to ensure that community agencies were helpful in providing support and services (2.05 vs. 2.32, $p < 0.05$).

There was no significant change in the composite domain of patient advocacy during the clerkship (10.05 vs. 10.23 out of possible 15, $p > 0.05$). However, the individual item measuring the frequency of encouraging patients to focus on healthy development of multiple personal dimensions (e.g., physical, social, emotional, spiritual) in an effort to enhance overall well-being did increase significantly (2.32 vs.2.58, $p = 0.01$).

Discussion

These results are encouraging because they strongly suggest that the family medicine clerkship experience was beneficial in promoting competency in the social and community contexts of health care. Our construct definition of social and community competency is similar to definitions of cultural competency such as that of Robins and colleagues: "Culturally competent health care acknowledges that in every physician-patient encounter at least two different reference points are represented and that physicians need to learn about their patients' health beliefs, incorporate their patients' concerns and perspectives into delivering health care, and develop treatment and prevention plans that meet their patients' beliefs, needs, and goals."[37]

However, a typical definition of cultural competency may not be inclusive enough to reflect the totality of non-biological influences on health.[38,39] In addition, educational interventions that do not address social and community determinants of health fail to consider the complex web of associations leading to observed health disparities.[33] Thus, a more global paradigm encompassing the integration of culture, race and ethnicity, and community and social factors is needed to assist medical students in viewing health and health care in a more comprehensive and, thus, more informative way.[39]

This study has several limitations. First, we do not have a control group. Therefore, we cannot conclude that the differences observed were due to the educational intervention targeting social and community competency or are a result of other aspects of the family medicine clerkship. Also, we cannot preclude the possibility that students over- or under-reported their knowledge, skills, and attitudes. Given the modest response rate of 51%, an important concern that remains is whether or not non-responders had different experiences from those of responders, thereby introducing bias due to differential drop-out.

Despite these limitations, students demonstrated a rich fund of knowledge of extant community resources in their papers and presentations, and proposed cogent and creative community interventions at the end of each clerkship. Also, it is reasonable to assume that an intervention that requires researching community resources would increase knowledge of these resources and increase self-efficacy in communicating community support services to patients. Furthermore, it would not appear feasible to expect students to get involved in a major way in patient advocacy over the brief duration of the clerkship. Given the high baseline scores within the advocacy domain and our anecdotal observation that many of the medical students were already engaged in patient advocacy activities and community service prior to taking the clerkship, there may have been a ceiling effect within this domain. Many of the ideas for community interventions proposed by students had a long lead time. Thus, longer-term follow-up would likely be more informative in determining the effect of our educational intervention on advocacy.

This is our first educational intervention to define, teach, and demonstrate significant improvement in the educational construct of social and community competency for health care. Further research is needed to demonstrate the validity and reliability of our survey instrument and to compare the efficacy of this intervention to a group of student controls.

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