Integration of Racial, Cultural, Ethnic, and Socioeconomic Factors Into a Gastrointestinal Pathophysiology Course

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Background & Aims: Our study describes a faculty development program to encourage the integration of racial, cultural, ethnic, and socioeconomic factors such as obesity, inability to pay for essential medications, the use of alternative medicine, dietary preferences, and alcoholism in a gastrointestinal pathophysiology course. Methods: We designed a 1-hour faculty development session with longitudinal reinforcement of concepts. The session focused on showing the relevance of racial, ethnic, cultural, and socioeconomic factors to gastrointestinal diseases, and encouraged tutors to take an active and pivotal role in discussion of these factors. The study outcome was student responses to course evaluation questions concerning the teaching of cultural and ethnic issues in the course as a whole and by individual tutorials in 2004 (pre-faculty development) and in 2006 to 2008 (post-faculty development). Results: Between 2004 and 2008, the proportion of students reporting that “Issues of culture and ethnicity as they affect topics in this course were addressed” increased significantly (P = .000). From 2006 to 2008, compared with 2004, there was a significant increase in the number of tutors who “frequently” taught culturally competent care according to 60% or greater of their tutorial students (P = .003). The tutor’s age, gender, prior tutor experience, rank, and specialty did not significantly impact results. Conclusions: An innovative faculty development session that encourages tutors to discuss racial, cultural, ethnic, and socioeconomic issues relevant to both care of the whole patient and to the pathophysiology of illness is both effective and applicable to other preclinical and clinical courses.

Disparities in health care are pervasive.1–8 In an attempt to foster the provision of consistent and equal care, medical schools have been encouraged to address and discuss from the earliest stages differences of race, culture, ethnicity, and socioeconomic status and how they impact the patient–physician relationship, as well as the understanding and management of illness to provide consistent and equal care.9,10 To determine whether preclinical and clinical courses at our medical school were addressing issues of culture, socioeconomic status, and ethnicity, the newly formed Cross Cultural Care (CCC) Committee in the fall of 2003 petitioned the medical school assessment group to add 2 questions to the anonymous student evaluation forms. The questions were designed to measure students’ perception of the frequency of teaching issues of culture and ethnicity in the overall course and in the individual tutorial groups.

The Gastrointestinal Pathophysiology course was invited to become the first course at Harvard Medical School to explicitly integrate the discussion of social, ethnic, and cultural factors into the pathophysiology tutorials. In 2006, we designed a 30-minute program to teach tutors how to interweave the discussion of racial, cultural, socioeconomic, and ethnic issues into tutorials. We specifically addressed the issues of obesity, inability to pay for essential medications, use of alternative medications, alcoholism, and culturally and ethnically relevant dietary preferences. These factors were picked because we believed that these issues are central to the discussion of both the pathophysiology of illness and to excellent care of the whole patient.

When our 2006 results showed that we had improved tutor discussion of CCC but the results did not reach significance, we designed a full-hour program for tutors with modified triggers in 2007 and used this program again in 2008. This article describes our 1-hour intensive faculty development program with longitudinal reinforcement for training tutors and compares it with the 2004, 2006, 2007, and 2008 data.

Methods

Format of the Gastrointestinal Pathophysiology Course

The Gastrointestinal Pathophysiology Course includes two to three 90-minute, problem-based learning tutorials each week with 7 to 9 students and 1 tutor.11 In 2006, we modified each of the course’s 3 cases by adding CCC discussion triggers.

Medical Student Subcommittee Review

After setting up the tutorial case triggers in 2006, we decided to modify them slightly in 2007 to improve the ease of discussion. We asked a group of students interested in CCC to
review our proposed modifications. The committee reviewed each case and gave us helpful feedback. An acknowledgement was given to each student at the end of each case.

**Triggers Added to Existing Tutorial Cases in 2006 and Modified in 2007**

**Tutorial case 1.** The case focuses on a 39-year-old Caucasian janitor with severe reflux esophagitis, Barrett’s esophagus, and high-grade dysplasia. The triggers added to this case were massive obesity and the patient’s inability to pay for the proton pump inhibitor medication. The addition of these triggers provided a forum for the discussion of physicians’ biases in dealing with obese patients. It also guided the students toward a practical solution for obtaining essential medications for patients who are unable to pay for them through a hospital-based Medication Assistance Counselor.

**Tutorial case 2.** This case details the illness of a 42-year-old Chinese American travel agent with Crohn’s disease. She eventually needs an extensive ileal resection, but after surgery her diarrhea worsens despite the use of cholestyramine. In our revised case, the patient is found by the hospital nutritionist to be taking a Chinese herbal preparation sent to her by her family in Hong Kong that contains senna, a cathartic. When she develops oxalate kidney stones, her dietary preferences are respected with ethnic foods that are low in oxalate. The herbal pill is used as a trigger to encourage discussion of stereotyping and alternative medicine use as well as the diagnostic and therapeutic confusion that can occur if alternative medicine use is not recognized.

**Tutorial case 3.** The third case describes a 75-year-old Polish pipe fitter with Hepatitis C who is a daily and heavy drinker of alcohol with his buddies at a Veterans of Foreign Wars (VFW) Post. The new triggers added were Polish ethnicity, drinking with his buddies at the VFW Post, and his reluctance to go to Alcoholics Anonymous. The patient’s insistence on eating heavily salted foods had been present previously, but the food choice was switched to snacks he could readily obtain while drinking at the VFW Post. We focus on helping students recognize that the war trauma involved and the close culture formed among his friends at a VFW Post could serve as a barrier to his stopping drinking. The emphasis is placed on the multiple resources and organizations that are available to help him stop drinking and the importance of abstinence to improve his portal hypertension. We also discuss his cultural and dietary preferences for salty snacks that contribute to his worsening ascites.

**Faculty Development Session**

The 30-minute faculty development session in 2006 resulted in improvement in CCC discussion, but when these data did not reach significance we created a 1-hour evening faculty development session that presented racial disparity data, discussed the relevance of triggers to pathophysiology, and encouraged tutors to make up their own questions to stimulate CCC discussion. The 1-hour faculty development session consisted of 5 parts. First, there was a 5-minute overview defining cross-cultural care and its relevance to clinical medicine (A.S.P. and R.L.-Q.). Second, there was a 10-minute discussion by the course director (H.M.S.) on disparities in health care and their relevance to gastrointestinal diseases. A review of the baseline and prior years’ tutor data for an active CCC discussion was presented as a way of encouraging tutors to improve their own performance. Third, interactive learning groups of tutors developed their own questions to use in their tutorials to promote the discussion of the CCC case triggers. The fourth part was a 10-minute overview presented by H.M.S. on how to interweave pathophysiology and the trigger elements. Specifically, the data relating obesity to a higher risk of reflux and of increased risk for adenocarcinoma of the esophagus were reviewed. The impact of a Crohn’s patient taking a Chinese herbal preparation containing senna, a known cause of melanosis coli which may be recognized during colonoscopy, was discussed. The improved 5-year survival and decreased portal hypertension in an alcoholic if he/she can be convinced to stop drinking and the need to curtail salt for control of ascites were discussed. Finally, there was a 20-minute review of a 5-minute mock tutorial video of one of the tutors (D.A.L.) discussing case 3 (the patient with alcoholism and hepatitis C) with a volunteer group of students. The discussion focused on the difficulty of stopping alcohol drinking and what options are available to assist the patient in his attempts to stop drinking. The video shows how to guide the discussion of CCC material. After the video concluded, tutors reflected on how they could lead a similar discussion with the questions they had just developed. Tutors were given readings on cross-cultural care.

**Weekly Tutor Meetings With Reinforcement**

Beginning in 2007 and continuing in 2008, we held a meeting for tutors each week in which 10 minutes of the hour were devoted to tutors’ discussing their anecdotal experiences with attempts to weave cross-cultural care issues into the pathophysiology tutorial. An expert facilitator was available at each meeting (A.S.P. or R.L.-Q.).

![Figure 1. Students’ perception of the statement, “Issues of culture and ethnicity as they affect topics in the course were addressed” as follows: frequently, sometimes, or never. Compared with the baseline year of 2004, the proportion of students noting “frequently” increased significantly for 2006 (P = .000), 2007 (P = .000), and 2008 (P = .000).](image-url)
We analyzed anonymous student responses to the 2 questions described earlier by using 2-tailed Z tests for proportions and compared 2004 data with data collected in 2006, 2007, and 2008. To determine if there were specific characteristics of the tutors who actively taught CCC frequently, we chose to look at the sample of tutors who had at least 60% of their students perceiving them to be actively teaching CCC frequently and looked at their tutoring experience, rank, specialty affiliation, age, and sex in comparison with those tutors with less than 60% frequency. The tutors’ evaluation scores for their overall performance were correlated with their scores for actively teaching cultural issues. The chi-square test was used to determine the correlation between tutors’ overall teaching ratings and their ratings of frequently teaching CCC.

### Results

#### Course Evaluation

In the evaluations for the Gastrointestinal Pathophysiology course between 2004 and 2008, the proportion of students reporting that “issues of culture and ethnicity as they affect topics in this course were addressed” changed significantly. In 2004, 18% of students said issues of culture and ethnicity were discussed “frequently.” This increased significantly with less than 60% frequency. The tutors’ evaluation scores for their overall performance were correlated with their scores for actively teaching cultural issues. The chi-square test was used to determine the correlation between tutors’ overall teaching ratings and their ratings of frequently teaching CCC.

#### Data Analysis and Statistical Methods

We analyzed student responses to the same 2 questions about the teaching of culture and ethnicity issues that were included in all course and tutorial evaluations. The first question asked, “Issues related to culture and/or ethnicity as they affect the topics in this course were addressed,” as part of the students’ overall evaluation of each course. The second question asked, “This tutor actively teaches culturally competent care,” as a component of the students’ tutor assessment. The 3 possible responses to both items were as follows: frequently, sometimes, or never.

Although the school evaluated CCC teaching beginning in 2004, we did not initiate formal curricular changes until 2006. Therefore, the 2004 data, unbiased by any interventions, serve as a baseline against which the 2006, 2007, and 2008 data are measured. To understand changes in frequency of CCC teaching, we also analyzed the personal characteristics of tutors who frequently discussed cross-cultural care to determine whether such tutors differed in age, sex, teaching experience, rank, specialty, or teaching grades from those who did not discuss CCC as frequently.

Approval for these studies was obtained from Harvard Medical School’s Committee on Human Studies in 2006, 2007, and 2008.

#### Figure 2

Students’ response to the statement, “This tutor actively teaches culturally competent care,” either frequently, sometimes, or never. Compared with the baseline year of 2004, the proportion of students saying their tutor actively taught CCC “frequently” significantly increased in 2007 and 2008 ($P < .05$), but was not significantly increased in 2006.

#### Figure 3

Individual tutor percentages for students’ perception that the tutor was actively teaching CCC “frequently” in 2004 compared with 2006, 2007, and 2008. In 2007 and 2008 the proportion of tutors rated by 80% or greater of their students as “frequently” teaching CCC was significantly higher than in 2004 and 2006 ($P < .05$).
cantly to 40% in 2006, 51% in 2007, and 65% in 2008 ($P < .000$) (Figure 1).

In 2006 only, we analyzed the change in evaluations for this same question for all the preclinical courses for the academic years 2003–2004 and 2005–2006. The majority (13 of 18) of individual first- and second-year courses did not change significantly from 2004 to 2006 with regards to their ratings for this question. Four courses, including the Gastrointestinal Pathophysiology course, had statistically significant increases at a $P$ level of confidence of .05 in the proportion of students saying culturally competent care issues were discussed frequently (data not shown). We have no information regarding the methods the other 3 courses used to improve their evaluations.

**Tutor Evaluation**

In 2006, the proportion of students who perceived their tutor as actively teaching CCC frequently increased compared with 2004, but was not significantly different. In 2007 and 2008, the proportion of students who perceived their tutor as actively teaching CCC frequently significantly increased compared with 2004 ($P < .05$) (Figure 2). In 2007 and 2008, significantly more tutors compared with 2004 had 80% or greater of his/her students perceiving the tutor to be actively teaching CCC frequently ($P < .05$) (Figure 3). In 2008 there were 8 tutors who had 100% of his/her students in the tutorial perceive that they were actively teaching CCC frequently (Figure 3).

**Tutor Characteristics**

There were a total of 49 tutors from 2004, 2006, 2007, and 2008 who had 60% or more of their tutorial students noting that they were teaching CCC frequently (Table 1). We compared their characteristics with the group of 41 tutors from 2004, 2006, 2007, and 2008 with less than 60% of their students rating them as actively teaching CCC frequently. No significant difference in frequency of teaching CCC was noted with regard to age ($\leq 35$ years vs $>35$ years), sex, prior experience as a gastrointestinal tutor, academic rank, or primary specialty. However, compared with 2004 tutors, the tutors in 2006 to 2008 as a combined group were significantly more likely to be perceived by 60% or greater of their tutorial students as teaching CCC frequently ($P < .003$). Tutors with excellent overall evaluation scores as teachers were significantly more likely to be rated by their students as also actively teaching CCC frequently ($P < .005$) compared with those tutors with less good overall scores as teachers (Figure 4).

**Table 1. Characteristics of Tutors With Frequency Ratings of $\geq 60\%$ or $< 60\%$**

<table>
<thead>
<tr>
<th></th>
<th>2004 (n = 22)</th>
<th>2006 (n = 23)</th>
<th>2007 (n = 22)</th>
<th>2008 (n = 23)</th>
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<tbody>
<tr>
<td>$\geq 60%$</td>
<td>(n = 6, 27%)</td>
<td>(n = 10, 43%)</td>
<td>(n = 16, 73%)</td>
<td>(n = 17, 74%)</td>
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<td>$&lt; 60%$</td>
<td>(n = 16, 73%)</td>
<td>(n = 13, 57%)</td>
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<td>Age, y</td>
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<td>$\leq 35$</td>
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<td>8 (80%)</td>
<td>11 (69%)</td>
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<td>1 (17%)</td>
<td>2 (20%)</td>
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<td>$&gt; 35$</td>
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<td>7 (70%)</td>
<td>4 (25%)</td>
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<td>10 (77%)</td>
<td>5 (83%)</td>
<td>13 (76%)</td>
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<tr>
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<td>Female</td>
<td>2 (33%)</td>
<td>3 (30%)</td>
<td>4 (25%)</td>
<td>4 (24%)</td>
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<tr>
<td></td>
<td>6 (38%)</td>
<td>3 (23%)</td>
<td>1 (17%)</td>
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<td>6 (38%)</td>
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<td>10 (63%)</td>
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<tr>
<td>GI fellow</td>
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<td>3 (19%)</td>
<td>3 (17%)</td>
</tr>
<tr>
<td></td>
<td>6 (38%)</td>
<td>2 (15%)</td>
<td>1 (17%)</td>
<td>3 (50%)</td>
</tr>
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<td>GI faculty</td>
<td>1 (16%)</td>
<td>4 (40%)</td>
<td>6 (37%)</td>
<td>7 (41%)</td>
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<td>Medicine attendings and residents</td>
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<td>3 (30%)</td>
<td>4 (25%)</td>
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<td></td>
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<td>0</td>
<td>2 (15%)</td>
<td>3 (17%)</td>
</tr>
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</table>

NOTE. Tutors from 2006–2008 as a group were significantly more likely to be perceived by 60% or greater of their tutorial students as actively teaching CCC “frequently” compared with 2004 ($P = .003$).

GI, gastrointestinal.

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**Figure 4.** A tutor’s overall evaluation score as a teacher on a Likert scale (in which 1, the lowest score, is the best score), is correlated significantly with his/her “active” teaching of CCC “frequently” ($P = .005$).
Discussion

This study shows that an innovative program consisting of a 1-hour faculty development session, cases with CCC triggers, and weekly longitudinal reinforcement was successful in significantly improving students’ perception of the frequency of discussion of CCC in both the overall gastrointestinal pathophysiology course, and by individual tutors. Our data suggest, but do not prove, that it was the faculty development program rather than the case changes that led to the significant increase in discussion of cross-cultural care. The faculty development session focused on helping tutors to understand the relevance of the racial, cultural, ethnic, and socioeconomic triggers to course specific gastrointestinal diseases, and encouraged tutors to take an active and pivotal role in generating questions they might use to stimulate students’ discussion of these factors. Thus, the CCC discussion was interwoven with discussions of pathophysiological concepts in a preclinical tutorial rather than taught as a separate course or curriculum as others have done.26–28 Although there is no direct evidence to prove that cross-cultural care curricula improve the quality of care delivered to patients, the hope is that medical students will learn key cross-cultural attitudes, knowledge, and skills from the tutorial curriculum that ultimately will help to improve patient care and decrease physician biases.9

In the spring of 2004, only 18% of the second-year students in the Gastrointestinal Pathophysiology course checked “frequently” for the statement “Issues of culture and ethnicity were addressed” on their course evaluation forms, putting the gastrointestinal pathophysiology course in the lowest ranks of the 18 preclinical courses for teaching CCC. In 2008, 65% of the students checked “frequently” for the same course statement. The tutors also improved with 74% of the students in all the tutorials noting that their tutor actively taught CCC frequently compared with 43% in 2004. We chose 2004 rather than 2005 as our baseline data because 2004 data were free of interventions to improve CCC discussion.

Our program may have succeeded for 2 reasons. First, in 2007 we used students to review our proposed modifications to the 2006 case triggers. Second, to increase the enthusiasm of the tutors for trying to seamlessly weave in CCC with pathophysiology, we put the emphasis on the following: (1) reviewing health care disparities data and how they directly affect gastrointestinal diseases; (2) encouraging the tutors to create their own questions for CCC discussion; (3) showing the relevance of CCC to gastrointestinal pathophysiology; and (4) weekly sharing of tutor anecdotes regarding CCC discussion in their tutorial groups with an expert facilitator.

We found no impact of the tutor’s sex, age, prior experience as a gastrointestinal tutor, rank, or specialty in determining whether a tutor actively taught CCC frequently. Our data imply that all tutors, even first time tutors who are interested and enthusiastic, can learn to interweave cross-cultural factors into tutorials with focused training. The frequency of discussion of these topics did not detract from the tutors’ overall grade as a communicator of pathophysiological principles. Rather, it may have helped because tutors with the highest ratings as teachers also were significantly more likely to be perceived as teaching CCC frequently.

In summary, an innovative faculty training program, that is readily applicable and adaptable to other preclinical and clinical courses, was able to significantly increase the frequency of discussion of racial, ethnic, and sociocultural factors in a pathophysiology course. Ultimately, we hope these discussions may lead to an improvement in physicians’ recognizing and avoiding bias in their care of patients.29–32

References

22. Menon KVN, Goeres GJ, Shah VH. Pathogenesis, diagnosis, and

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Conflicts of interest
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