A Web-Based Cultural Competency Training for Medical Students: A Randomized Trial

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Background: The objectives of this research were to compare a Web-based curriculum with a traditional lecture format on medical students' cultural competency attitudes using a standardized instrument and to examine the internal consistency of the standardized instrument. *Methods:* In 2010, we randomized all 180 1st-year medical students into a Web-based (intervention group) or a lecture-based (control group) cultural competency training. The main outcome was the overall score on the Health Belief Attitudes Survey (1 = lowest, 6 = highest). We examined internal consistency with factor analysis. *Results:* No differences were observed in the overall median scores between the intervention (median 5.2; 25th percentile [Q1] 4.9, 75th percentile [Q3] 5.5) and the control groups (median 5.3, Q1 4.9, Q3 5.6) (*P* = 0.77). The internal consistency of the 2 main subcomponents was good (Cronbach's alpha = 0.83) to acceptable (Cronbach's alpha = 0.69). *Conclusions:* A Web-based and a lecture-based cultural competency training strategies were associated with equally high positive attitudes among 1st-year medical students. These findings warrant further evaluation of Web-based cultural competency educational interventions.

Key Indexing Terms: Cultural competence; Medical education; Educational intervention. **[Am J Med Sci 2015;349(5):442–446.]**

Cultural competency[1] and cultural competency training are important components of education during medical school. The Association of American Medical Colleges recommends an integrated approach for such training.[2] Ultimately, an effective cultural competency education allows students to avoid stereotyping and empathize with the cultural norms of patients. To guide medical schools, the Association of American Medical Colleges developed the Tool for Assessing Cultural Competency Training (TACCT) to assess the cultural competency content of medical school curricula.[2–5] The instrument, designed by an expert panel, provides a framework that assesses 5 domains of a cultural competence curriculum: (1) rationale, context and definition; (2) key aspects of cultural competence; (3) understanding the impact of stereotyping on medical decision-making; (4) health disparities and factors influencing health and (5) cross-cultural clinical skills. The TACCT domains are subdivided into specific objectives for student knowledge, attitudes and skills.[2] Although the TACCT instrument provides a valuable assessment tool for cultural competency curricula, it was neither designed to evaluate nor suggest teaching strategies or assess learning outcomes.

Initiatives to integrate cultural competency training in medical school curricula have been implemented in various formats. In meta-analyses, cultural competency training has been shown to improve knowledge, attitudes and skills among health care providers[6,7]; both long and short interventions were successful. However, the meta-analyses also identified shortcomings in study methodology and the need for uniform assessment methods.[6,7] Moreover, 2 of the 64 studies included in the meta-analyses used a randomized controlled design and most (n = 50) were designed without a comparison group.[6,7] An updated review also highlighted the limitations of cultural competency studies with no control groups and nonrandom assignments.[8]

Despite these limitations, research to date suggests that cultural competency training can effectively sensitize health care professionals to cultural differences. However, important barriers still exist for implementing cultural competency training in medical schools; examples include identifying the time in the curriculum and finding faculty with time to compile and present the information. In addition, assessment instruments have been only partially tested in other settings. Thus, testing the effectiveness of new, short and standardized approaches for teaching cultural competence is warranted.

Given this framing, the authors first developed and tested an online Web-based curriculum in a previous study—the Cultural Competence Online for Medical Practice.[9] The main objectives of the present study were (1) to compare the online Web-based curriculum to a traditional lecture format on medical students' cultural competency attitudes using a standardized instrument and (2) to examine the internal consistency of the standardized instrument internal consistency with factor analysis. A final objective was to compare the subscores of the standardized instrument between the 2 groups. Some but not all studies have demonstrated the effectiveness of Web-based formats to improve knowledge, attitudes and even clinical outcomes.[10–14] However, the authors are not aware of a randomized controlled study comparing a Web-based approach to other formats to teach cultural competency.

METHODS

Design, Setting and Participants

In a randomized controlled study, all 1st-year medical students (matriculating class of 2010) were randomized to

TABLE 1. Online training: overview and educational objectives

Domain/case/main objective	Description	Content
Patient's perspective		
Case 1. Cultural background		
To define race, ethnicity and culture and identify patients' cultural and social background	Highlights religion's impact on patient reactions to diagnosis, coping mechanisms and its importance in forming a therapeutic alliance	Three stories from real patients (video, duration 30 s to 1.5 min); 9 objectives; 3 patient interviews; 3 Likert-style multiple choice questions and 1 short answer question, including explanations; module summary
Case 2. Diet and exercise		
To identify how race and culture relate to health, care-seeking behaviors, health beliefs and adherence	Highlights the role of food in culture, barriers to diet changes and adherence and the importance of the DASH diet in African Americans	Four stories from real patients (video, duration 1 min–1.5 min); 10 objectives; 4 patient interviews; 3 Likert-style multiple choice questions and 1 short answer question, including explanations; module summary
About providers		
Case 3. Explore stereotyping		
To identify physician stereotyping	Highlights the importance of eliciting a thorough patient history to recognize and avoid stereotyping in patients with cardiovascular disease	One interactive case-vignette (text); 15 objectives; 1 clinical scenario; 3 multiple choice questions, 3 Likert-style multiple choice questions and 1 short answer question, including explanations; module summary
Case 4. Explore biases		
To identify physician bias, describe own bias, list how it affects clinical care and demonstrate strategies to address/reduce physician bias	Highlights how even a subconscious bias may affect the care of patients with cardiovascular disease	One interactive case-vignette (text); 14 objectives; 1 clinical scenario; 1 multiple choice and 4 Likert-style multiple choice and 1 short answer question, including explanations; module summary

a traditional lecture format (control group) or the online Web-based curriculum (intervention group) in September 2010. The school administration provided aggregated data on race and ethnicity; students identified themselves as white or Caucasian (n = 134), Asian or Asian-Indian (n = 23), black or African American (n = 10), Hispanic (n = 4), and 9 provided no response. The Institutional Review Board at the University of Alabama at Birmingham approved the study. The study was conducted in the context of a required activity as part of the Introduction to Clinical Medicine curriculum. Participation in the study was reflected in completion of the survey following delivery course content. Students received no incentives or penalties.

Control Group

The lecture-based format consisted of a 33-slide presentation, presented in a single lecture, focusing on the importance of clear communication, overcoming language barriers and eliciting the patient's perspective on his or her own illness. The lecture included the use of a video recording of a clinical interaction focusing on the impact of cultural issues on a patient outcome and a large group discussion of these issues. The lecture, akin to a "usual care" group in a clinical trial, was the same one delivered for the previous 2 years. The content of the lecture was different than the Web-based activity. Attendance was required.

Intervention Group

The Web-based training consisted of 4 highly interactive case-based modules emphasizing cross-cultural approaches to care for African American patients with cardiovascular disease, especially hypertension. Students were required to complete all cases in an independent study fashion.

The Web-based curriculum, Cultural Competence Online for Medical Practice, was designed and implemented after

a rigorous formative evaluation process.[9] Designed for practicing physicians, residents and medical students, the Web site is available in the public domain (www.c-comp.org). Briefly, the site is organized in 4 areas: patient's background, provider and health care, cross-culture and resources to manage cultural diversity. As the formative evaluation indicated greater importance of the first 2 domains, the 4 case-based modules are embedded in the patient's background and provider and health care areas. The cases include videos with portions of stories from real-life patients[15] and interactive questions. After each question was answered, participants received immediate feedback of their responses as compared with the response by other participants. A correct answer was not the goal of the question; rather, feedback was provided in the form of comparison with the responses of others. We based this approach from the social cognitive approach of learning[16] and peer comparison from the quality improvement literature.[14,17] Each case took approximately 5 to 15 minutes to complete. Table 1 shows a general overview and educational objectives for each case.

Main Outcome

For the primary objective, the main outcome was the overall attitude score on the Health Beliefs Attitudes Survey (HBAS)—a standardized instrument to assess cultural competency attitudes.[18,19] Students completed the HBAS within 2 weeks after completion of their respective cultural competency training. The HBAS consists of 15 items, scored on a 6-point Likert scale (1 = strongly disagree, 2 = moderately disagree, 3 = mildly disagree, 4 = mildly agree, 5 = moderately agree, 6 = strongly agree; higher score indicates more culturally competent attitudes). The HBAS assesses various aspects of students' attitudes on the relationship of cultural competency to quality healthcare and has been partially tested (excellent internal consistency, Cronbach's alpha = 0.79–0.86; previously