Racial and Ethnic Disparities in Care
The Perspectives of Cardiologists

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Background—Despite extensive documentation of racial and ethnic disparities in care, provider awareness of disparities has been thought to be low. To be effective, educational efforts for physicians must consider providers’ knowledge and beliefs about what causes disparities and what can be done about them.

Methods and Results—We conducted a Web-based survey of 344 cardiologists to determine their level of awareness of disparities and views of underlying causes. Responses were assessed by means of 5-point Likert scales. Thirty-four percent of cardiologists agreed that disparities existed in care overall in the US healthcare system, and 33% agreed that disparities existed in cardiovascular care. Only 12% felt disparities existed in their own hospital setting, and even fewer, 5%, thought disparities existed in the care of their own patients. Despite this, most respondents rated the strength of the evidence about disparities as “very strong” or “strong.” Respondents identified many potential causes for disparities in care but were more likely to endorse patient and system level factors (eg, insurance status or adherence) rather than provider level factors.

Conclusions—Cardiologists’ awareness of disparities in care remains low, and awareness is inversely proportional to proximity to their own practice setting. (Circulation. 2005;111:1264-1269.)

Key Words: cardiovascular diseases ■ ethnic groups ■ physicians ■ public policy ■ quality of health care

Racial and ethnic disparities in health care have been extensively documented.1,2 The hundreds of articles describing this phenomenon have been summarized in several seminal reports, such as the report of the Institute of Medicine entitled Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care1 and the congressionally mandated report on national healthcare disparities from the Agency for Healthcare Research and Quality.2 Although disparities appear to exist in nearly all clinical areas and settings studied, much of the evidence comes from the field of cardiovascular care. The causes of disparities are multifactorial; however, a study by Schuman et al,3 in which physicians responded with different recommendations for cardiac catheterization to videotapes of patient-actors who differed by race and gender but had identical presentations for heart disease, suggests that physician decision making accounts for some of the disparities in care. Van Ryn and colleagues,4,5 drawing on the literature describing human behavior, have developed an explanatory model for this phenomenon.

In 2002, the American College of Cardiology (ACC) and the Henry J. Kaiser Family Foundation (KFF) conducted a review of the literature in cardiovascular care.6 In brief, the report found strong evidence for racial disparity in the use of diagnostic cardiac procedures, coronary revascularization, thrombolytic therapy, and other cardiac drug therapies, procedures, and treatments. The development and dissemination of the report were part of a multifaceted provider awareness campaign that sought to increase awareness of disparities among cardiologists and the primary care physicians who refer to them. The campaign involved a number of partnering organizations, including the American Heart Association (AHA), ACC, and Association of Black Cardiologists (ABC). Participating organizations agreed to place a print advertisement on racial/ethnic disparities in their organizations’ professional journals to help disseminate the KFF literature review, to include sessions on disparities at annual meetings of their associations, and to write articles about disparities for their association newsletters. A full listing of the partnering organizations and a picture of the advertisement, which featured photographs of 4 women from different racial/ethnic backgrounds, with the caption, “These women have the same disease but their treatment is different. Help Understand Why,” can be found at http://www.kff.org/whythedifference/index.htm.
An additional component of the campaign was to assess cardiologists’ and cardiac surgeons’ current perceptions of racial/ethnic disparities, including both those who had been exposed to the campaign and those who had not. Understanding what clinicians know about disparities, what they think causes them, and what can be done about them is key to developing additional strategies—educational or otherwise—to address them. In early 2004, we conducted a survey of cardiologists and cardiovascular surgeons with the intent that the findings be used to guide further efforts at reduction of disparities. This article reports the results of the cardiologist component of that survey.

Methods

Study Sample

Data for this study were from a sample of cardiologists and cardiac surgeons who were members of one of 4 professional organizations: Cardiologists were members of ACC, AHA, and ABC, and surgeons were members of the Society of Thoracic Surgeons (STS). For ABC, we obtained e-mail addresses for the complete membership list. We obtained random samples of US members of ACC and AHA. The AHA sample was restricted to those councils with the highest proportion of practicing cardiologists. Similarly, STS provided e-mail addresses for US cardiac surgeons. Individuals whose names appeared on the list of >1 organization were randomly assigned to a single organization for purposes of sampling, with one exception: All ABC members were assigned to that organization. Additionally, we eliminated addresses of physicians at pharmaceutical companies or device manufacturers and individuals who were not physicians.

We then randomly sampled 250 members from the ABC list and sampled 500 members each from the other organizations’ lists, totaling 1750 physicians. This sampling design was used to ensure an adequate sample size of minority physicians. Of this total potential survey sample, 350 (20%) had e-mail addresses that were returned as undeliverable, and another 29 physicians returned the survey indicating that they did not practice medicine, resulting in a final eligible sample of 1371. The anonymous survey was accessed through a Web link included in an e-mail that asked recipients to participate. Up to 5 reminder e-mails were sent to e-mail addresses of respondents who did not click the link to respond to the survey. In addition, surveys were delivered by Federal Express to nonresponders for whom we had office addresses. The survey was conducted between February and April 2004.

Of the 1371 in the final eligible sample, 21 declined to participate, and 793 never accessed the survey online. We cannot determine how many in this latter group never received our initial e-mail and how many did not wish to participate. The final sample included 558 responses, resulting in an overall response rate of 41%. This article focuses on the 62% (n=344) of those respondents who were cardiologists.

Survey

Our survey was developed in part on the basis of a 1999 KFF survey that assessed knowledge and attitudes of a random sample of US physicians in all specialties. The draft survey then was reviewed by 2 external researchers and ACC, ABC, AHA, and STS leadership. The survey was subjected to a series of cognitive interviews and was pretested in both print and Web-based forms. The survey included items about the following: the extent to which physicians think that race/ethnicity (compared with other nonclinical factors) is a factor in patients receiving different kinds or amounts of care; the extent to which they believed that disparities in different aspects of cardiovascular care exist across different racial/ethnic groups; the extent to which they believed that blacks or Hispanics with known heart disease or cardiovascular risk factors were likely to undergo cardiac tests and procedures; physician perceptions of the strength of evidence about the presence of racial/ethnic disparities in care; respondent views about the patient and system factors that may help to explain any differences in cardiovascular care that exist across racial/ethnic groups; whether physicians are aware or involved in strategies aimed at reducing disparities in care; and information about physician demographic and practice characteristics. Most survey items used a 5- or 4-point Likert scale (eg, “strongly agree,” “agree,” “neither agree nor disagree,” “disagree,” and “strongly disagree” or “a great deal,” “some,” “a little,” and “none”). A copy of the survey is available on request.

Analysis

We first dichotomized responses to several items by combining those reporting to “strongly agree” or “agree” and considered the other 3 response options as lack of agreement. For the survey item asking about practice settings, any physician not indicating “academic medical center,” “hospital based,” “medium group,” or “large group” was coded as “small or small group.” In addition to practice setting, the survey obtained other respondent characteristics including gender, ethnicity, geographic region, graduation year from medical school, diversity of practice setting, awareness of the KFF campaign, and any professional memberships.

We then conducted univariate analyses to produce frequency distributions of physician responses to each item. We compared responses from different groups using t tests and χ² techniques as appropriate. We also conducted bivariate and multivariable logistic regression analyses to estimate provider characteristics associated with different responses on selected items. To adjust for potential confounders, multivariable logistic regression models included all available respondent characteristics excluding professional memberships, ie, gender, ethnicity, geographic region, graduation from medical school before 1985, practice setting, diversity of practice setting, and awareness of campaign.

Results

Characteristics of the physician sample are shown in Table 1. We received responses from 344 cardiologists, 323 of whom provided demographic information. Respondents were predominantly white and male, with nearly three quarters graduating from medical school before 1985. Forty-two percent of physicians reported working in settings in which minorities represented more than one quarter of the patients.

The majority of respondents (69%) agreed with the statement that, in the US healthcare system, people receive different care on the basis of whether they have insurance, and 58% agreed that care differed by the type of insurance they have. Only 34% believed that people received different care according to their racial/ethnic status (Figure 1). Table 2 provides a breakdown of those who agreed or strongly agreed that, in the US healthcare system, there were racial/ethnic differences in cardiac care for clinically similar patients. Physicians who were female, black, or who had large numbers of minority patients in their practices were more likely to report that these disparities existed. There were no differences in these beliefs by geographic area of the country or by year of graduation from medical school. The findings for physician gender and race persisted in a multivariable model; female and black physicians were more likely to agree that racial/ethnic disparities existed (odds ratio [OR]=2.81; 95% CI, 1.36 to 5.80 [P<0.01]; OR=5.70; 95% CI, 2.22 to 14.69 [P<0.001], respectively).

Interestingly, >60% of all providers surveyed rated the strength of evidence documenting racial/ethnic disparities in cardiovascular care as “strong” or “very strong”; however, this rating of the evidence was not statistically related to
provider’s beliefs about the existence of disparities in the healthcare system overall or in their practice.

In addition, the degree to which respondents reported that race/ethnicity affected cardiac care decision making differed dramatically when the proximity of the perspective was altered. Although 34% agreed that there were disparities in care overall in the US healthcare system, only 12% felt these disparities existed in their own hospital setting, and only 5% thought they existed among their own patients (Figure 2).

We fit a multivariable model to determine whether there were any relationships between provider characteristics and the perception that disparities existed in the healthcare system overall but not in the respondents’ own practice settings. Among all provider characteristics we measured, only the proportion of minority patients in the respondents’ practice setting was associated with physicians’ reports that disparities existed in the healthcare system but not in their own settings, and only 5% thought they existed among their own patients (Figure 2).

We fit a multivariable model to determine whether there were any relationships between provider characteristics and the perception that disparities existed in the healthcare system overall but not in the respondents’ own practice settings. Among all provider characteristics we measured, only the proportion of minority patients in the respondents’ practice setting was associated with physicians’ reports that disparities existed in the healthcare system but not in their own settings. Compared with physicians with low proportions of minority patients in their care settings, those with high proportions of minority patients were significantly less likely to perceive this difference between the healthcare system overall and their practice settings (OR=0.24; 95% CI, 0.07 to 0.86; P=0.03).

Respondents who disagreed or strongly disagreed with the statement that either blacks or Hispanics with cardiac disease or known cardiac risk factors were as likely as whites to receive similar diagnostic or therapeutic procedures (n=172) were asked about the likely causes of disparities. We selected this particular item as the basis for further questioning because it was the most ethnicity- and cardiac disease–specific set of questions in the survey. These respondents generally believed that both patient (Figure 3) and system factors (Figure 4) contributed to racial/ethnic disparities in cardiovascular care in the United States. Respondents believed that patient factors such as adherence to treatment, attitudes and beliefs about healthcare providers, and health behaviors were equal or stronger contributors to disparities relative to provider or system factors. We fit additional multivariable models to assess whether there were any associations between gender and/or race and beliefs about these patient and nonclinical factors. Similar to our other findings, blacks were more likely than whites to feel that “availability of doctors from a similar racial/ethnic background as minority patients” (OR=4.81; 95% CI, 1.95 to 11.83; P<0.001) and “physician attitudes and beliefs about patients from different racial/ethnic groups” contributed a great deal to racial/ethnic differences in cardiovascular care (OR=6.32; 95% CI, 2.45 to 16.34; P<0.001). In these analyses, the respondent’s gender did not have a significant association with any of the attitudes.

With regard to means of overcoming racial/ethnic disparities, 59% of respondents felt that increasing patients’ self-
management skills and 53% felt that expanding health insurance would be effective in reducing racial/ethnic disparities in care. In contrast, fewer than 30% of cardiologists felt that increasing provider awareness about disparities or improving the cultural competence of either the provider or the institution would likely be useful in addressing disparities.

We also compared the responses of cardiologists with those of cardiovascular surgeons on a few key issues. Surgeons were much less likely than cardiologists to report that racial/ethnic disparities exist in cardiovascular care in general or in their practice settings ($P<0.001$). Surgeons also were less likely than cardiologists to attribute nonpatient factors to those disparities ($P<0.05$). Additionally, they were less likely to rate the evidence for racial/ethnic disparities as strong or somewhat strong ($P<0.001$).

**TABLE 2. Characteristics of Physicians Reporting Racial/Ethnic Disparities in Specific Cardiac Services (n=312)*

<table>
<thead>
<tr>
<th></th>
<th>$\chi^2$ Test, % Reporting Disparities</th>
<th>Univariate Logistic Regression Model, OR (95% CI)</th>
<th>Multivariable Logistic Regression Model,† OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>50</td>
<td>2.95‡ (1.51, 5.79)</td>
<td>2.81‡ (1.36, 5.80)</td>
</tr>
<tr>
<td>Female</td>
<td>75‡</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Race/ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>51</td>
<td>5.41§ (2.33, 12.60)</td>
<td>5.70§ (2.22, 14.69)</td>
</tr>
<tr>
<td>Black</td>
<td>85§</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>37</td>
<td>0.56 (0.29, 1.10)</td>
<td>0.55 (0.27, 1.13)</td>
</tr>
<tr>
<td><strong>Geographic region</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northeast</td>
<td>55</td>
<td>1.32 (0.74, 2.37)</td>
<td>1.22 (0.62, 2.38)</td>
</tr>
<tr>
<td>Midwest</td>
<td>62</td>
<td>0.74 (0.39, 1.40)</td>
<td>0.72 (0.35, 1.47)</td>
</tr>
<tr>
<td>South</td>
<td>47</td>
<td>0.88 (0.47, 1.64)</td>
<td>0.93 (0.47, 1.84)</td>
</tr>
<tr>
<td>West</td>
<td>52</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Graduation from medical school before 1985</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>57</td>
<td>0.86 (0.52, 1.43)</td>
<td>1.42 (0.76, 2.66)</td>
</tr>
<tr>
<td>Yes</td>
<td>53</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Practice setting</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic medical center</td>
<td>54</td>
<td>1.01 (0.57, 1.81)</td>
<td>0.85 (0.45, 1.61)</td>
</tr>
<tr>
<td>Hospital based</td>
<td>54</td>
<td>1.16 (0.63, 2.12)</td>
<td>1.16 (0.59, 2.29)</td>
</tr>
<tr>
<td>Medium or large group (≥11 physicians)</td>
<td>59</td>
<td>0.88 (0.46, 1.70)</td>
<td>0.81 (0.39, 1.71)</td>
</tr>
<tr>
<td>Solo or small group (1–10 physicians)</td>
<td>51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diversity of practice setting</td>
<td></td>
<td>1.22 (0.68, 2.17)</td>
<td>0.86 (0.44, 1.70)</td>
</tr>
<tr>
<td>&gt;25% are minorities</td>
<td>61</td>
<td>0.66 (0.37, 1.20)</td>
<td>0.62 (0.32, 1.20)</td>
</tr>
<tr>
<td>10% to 25% are minorities</td>
<td>46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;10% are minorities</td>
<td>56</td>
<td></td>
<td></td>
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<tr>
<td><strong>Awareness of campaign</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>52</td>
<td>1.22 (0.78, 1.90)</td>
<td>0.91 (0.55, 1.51)</td>
</tr>
<tr>
<td>Yes</td>
<td>57</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The sample size for this table is 312 because 11 respondents who provided demographic information did not answer this question.
†The multivariable model included all physician characteristics listed in this table.
‡$P<0.01$, §$P<0.001$.

**Discussion**

Cardiologists’ level of awareness of racial/ethnic disparities in care remains low. Fewer than one third of cardiologists perceived that race/ethnic disparities exist in the US healthcare system, and even fewer believed that these disparities exist in their own practice settings. The general lack of awareness is a bit surprising given the extent of government agencies’ and professional associations’ efforts to make physicians aware of this issue. Nevertheless, the attitudes about the difference between the system overall and one’s practice setting are consistent with other findings on patient and provider beliefs about the healthcare system. For example, surveys about patient experiences with care find that patients dislike physicians in general but like their own physician. These surveys also report that white, black, and
Hispanic patients are dissatisfied with care in general but rate their own care highly. Physicians have, in other settings, overestimated their own effectiveness in providing guideline-compliant care. For example, they often overestimate the frequency with which they provide cancer screening to their patients. An alternative explanation for our findings may be that many respondents do not provide care for minority patients and thus would not report disparate care in their practices. This seems unlikely to be the case, however, because only one quarter of respondents’ practices had minority patients, and both providers with low or high proportions of minority patients were likely to report that disparities existed in the system overall but not in their own practices. We note that for disparities of the level documented in the literature to occur, they must be widespread in practice.

The survey has several important limitations that may have influenced the results. First, the response rate was relatively low; however, without additional contact information for those surveyed, there was ultimately little that could have been done to increase the response rate for this Web-based survey. Second, we were able to sample only those members who had provided e-mail addresses to their professional associations. We do not know how members providing e-mail addresses differ from those not providing this information. Furthermore, response bias may have had an effect if survey respondents were more likely than nonrespondents to be aware of disparities or rate the strength of the evidence of disparities as high. If that is indeed the case, the findings would have overestimated physicians’ level of awareness of disparities; it is possible that the true rate of awareness is much lower. Finally, relatively small sample sizes precluded substantial multivariable analyses.

Multiple factors have been shown to account for racial/ethnic disparities in cardiovascular care, and these operate on the patient, provider, and system levels. For example, one of the contributing factors to disparities in cardiac revascularization rates is racial/ethnic differences in referral patterns. To that end, it is noteworthy that respondents identified patient and system factors (adherence and lack of health insurance) as the 2 major causes of disparities, but only a minority of respondents identified physician factors as a cause. An example of such a factor was documented by Yedidia, who shadowed...
physicians on rounds in a teaching hospital. Yedidia found that referral decisions were often based on incorrect assumptions about patient insurance status. In other words, the physician often assumed that the patient was uninsured when this was, in fact, not the case. Epstein et al. who examined revascularization procedures, found that whites are more likely than blacks to have received a revascularization procedure for reasons consistent with appropriateness criteria, again suggesting that physicians may apply different criteria in recommending procedures for whites and blacks. Our finding that black and female physicians are more likely to report the presence of disparities is not surprising. Substantial literature suggests that women physicians are more attuned to sociocultural issues. In contrast, we do not have an easy explanation for our findings that physicians’ ratings of the strength of the evidence on disparities are not related to their perceptions of the existence of them.

How can physicians confront and address the role that they play in disparities in care? This report suggests that a large number of cardiologists remain unaware of the existence of disparities, specifically in cardiovascular care. To that end, strategies to increase the awareness of cardiovascular care providers may be of benefit. The message may be more believable if it comes from within the cardiovascular provider community. The ACC/KFF report published by ACC was intended to convey and disseminate such information. ACC mailed it directly to ~5000 of its members. It has also been shared widely via the KFF Web site, which reports >18,000 downloads of the report. The proportion of those downloads that were to cardiovascular care providers is not known. If experience is any guide, educational strategies are likely to have only limited effectiveness.

An additional mechanism to increase awareness may be to encourage practice settings to collect data on their own patients’ race/ethnicity and to produce reports on quality of care stratified by these demographics. Some plans and hospitals have had experience with collecting such data, at least on a limited basis. Large health insurers are also examining quality of care for their different racial/ethnic enrollee groups, with the aim of developing interventions to address disparities that they uncover in the process. Some of these interventions may include feedback to physicians and hospitals. Even if awareness is slow to increase, some data suggest that improving quality of care through the use of practice guidelines can play an important role in addressing racial and ethnic disparities. Both the ACC and AHA are already active in promoting such programs, and in some cases their databases and registries provide additional useful information about disparities on a national scale, although it is not yet clear how much they will contribute to disparity reduction. The Robert Wood Johnson Foundation has recently launched a new quality improvement initiative, focused directly on the provision of cardiovascular care. Through this initiative, participating hospitals will receive support to assess their local cardiovascular care market and environment (including an examination of their own practice patterns), to develop strategies to improve inpatient cardiovascular care, and to form partnerships with providers to address disparities in the outpatient setting.

In the long run, no single intervention is likely to reduce or eliminate disparities. Nevertheless, the combination of increasing awareness, improving quality, and increasing patient demand for and participation in high-quality care will likely contribute to addressing this important societal health issue.

Acknowledgments
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