Racial Disparities and Site of Care

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Numerous studies have demonstrated that minority patients receive poorer quality health care than non-minorities. The mechanisms underlying this problem have not been identified, but the pervasiveness and consistency of racial and ethnic differences in healthcare quality have led most investigators to identify at most one or two overarching causes. To some, the consistency of these findings supports a hypothesis that physicians are at the heart of the problem. It is posited that due to sub-conscious biases, more overt prejudice, or cultural insensitivity, physicians do not treat minority patients as well as they treat non-minority patients. This hypothesis has received a great deal of attention, both in reviews from the Institute of Medicine and position statements from the American Medical Association and National Medical Association. In this paper, I review several studies that have focused on an alternative potential mechanism of racial and ethnic disparities in health care, which is based more on inequities in the structure of the healthcare system, rather than inequities in the treatment patterns of individual physicians. Determining the relative contribution of each of these mechanisms to racial and ethnic disparities in health care should be a priority. (*Ethn Dis.* 2005;15[suppl 2]:S2-31–S2-33)

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Introduction

Decades of research have demonstrated two related deficiencies in the United States healthcare system. The quality of care in the United States is low overall[1,2]; and particular vulnerable groups of patients, such as those who are non-White, poor, or elderly, systematically receive lower quality care than their less vulnerable counterparts.[3–7] Most of these studies have focused on large, representative datasets and examined either determinants of quality or the quality of care provided to vulnerable groups, but not both. As such, the relative contribution of variations in quality overall to variations in quality between vulnerable and less vulnerable patients have not been disaggregated. As emphasized in a recent Request for Applications from the National Institutes of Health:

> "the documentation of wide-spread disparities. . . has been an important contribution of outcomes and effectiveness research. Nevertheless, these insights have infrequently led to significant improvements in racial and ethnic disparities, in part, because the causes of and contributing factors to these inequalities are inadequately understood."[8]

In this article, I review several recent studies, in which researchers have endeavored to identify to what extent variations in care between vulnerable and less vulnerable patients are explained by systemic variations (ie, structural variations) in quality of care. Although these studies use both different analytic methods and analyze different metrics, they all have the same basic intent, which can be summarized in epidemiologic terms: to determine to what extent variations in care quality between patient groups are confounded by variations in quality of care settings. The studies also all focus on patients divided by their race or ethnicity.

Review of Studies

Differences in the Healthcare System Quality by Patient Race/Ethnicity

Bach et al evaluated primary care physicians who treated Black and White Medicare beneficiaries in 2001.[9] The purpose of the study was to first determine to what extent Black and White Medicare beneficiaries were treated by different groups of physicians, and then to determine if there were systematic differences between the two groups of physicians. In this analysis, the investigators observed that the care of Black and White Medicare beneficiaries rests to a large extent in the hands of different physicians, with the care of 80% of Blacks being provided by only one-fifth of all physicians. When comparing the physicians treating Blacks and Whites, the authors found that the physicians treating Blacks were less likely to be board- certified in their primary specialty, and more likely to report that they faced obstacles when trying to refer their patients to specialists for imaging tests or for elective hospital admission. Most of these findings were paralleled in analyses focusing on the geographic areas where Blacks and Whites received care, in that the physicians treating Blacks and Whites mirrored those who worked in the neighborhood in general. This study provides some evidence that the disparities in care received by Blacks and Whites may in part be due to differences in the qualifications or resources of their providers. However, this study neither demonstrated that the physicians treating Blacks and Whites actually provided different quality of care to their patients, nor did it deter-

Table 1. Association between patient race and hospital volume

Hospital Volume	Very Low	Low	Medium	High	Very High
Pancreatectomy (% Blacks)	8.7	8.0	6.8	6.0	5.0
Esphagectomy (% Blacks)	12.0	7.6	6.7	6.5	5.5

mine to what extent racial disparities are explained by this difference in treating physicians.

Chandra and Skinner evaluated sites of cardiac care for Blacks and Whites experiencing a myocardial infarction, in order to address a similar set of hypotheses.[12] In this study, the investigators also examined only Medicare beneficiaries. They found that 50% of Black care occurred in a subset of hospitals in which only 14% of non-Blacks received care, and also cited a related study showing that the quality of the myocardial infarction care was lower at the hospitals where Blacks were more likely to go. This study not only shows that Blacks and Whites receive their care to a great extent from different providers in different settings, but also supports the hypothesis that the differences in site of care are probably linked to differences in care quality. However, the investigators did not determine to what extent care differences between Blacks and Whites were due to the differences in care settings.

Birkmeyer et al have performed several analyses of surgical outcomes, showing that when care is stratified by either the procedure volume of the hospital or the performing surgeon, outcomes are superior in association with higher volume.[10,11] Coupled with this finding, Birkmeyer et al have shown that the volume of a procedure performed at a particular hospital is inversely associated with the percentage of patients treated at that hospital who are Black. The findings are shown for esophagectomy and pancreatectomy in Table 1, the two procedures for which volume is associated with the greatest difference in outcome. This study provides similar information to that emerging from the study of Chandra and colleagues.[12] Blacks receive their care to some extent in lower quality facilities than Whites. The extent to which this pattern explains disparities in outcome is not defined.[13]

Studies That Use Stratified Analyses to Disaggregate System Effects

There are not too many studies that have performed this type of analysis, perhaps because it is difficult to accumulate enough high-quality data to permit for the construction of multiple strata that contain a sufficient number of events. However, stratified analyses can allow an investigator to directly determine to what extent healthcare disparities are due to differences in care setting. Schneider et al[4] examined care received by Black and White Medicare beneficiaries enrolled in Health Maintenance Organizations (HMOs), as indicated by performance on 'HEDIS' measures (a set of measures proposed by the National Committee on Quality Assurance). The example they cited for differences in treatment of Blacks and Whites and its relation to care setting focused on mammography. Overall, race was associated with mammography rates, which differed by 8% between White and Black women aged 65 to 75 (70.9% vs 62.9% respectively, $P<.001$). The investigators stratified the 294 HMO plans in the study based on the proportion of Blacks enrolled, which served to separate those plans who provided most of the care to Blacks from those that provided only a small amount of care to Blacks. The investigators observed that in those plans with the greatest number of Black patients, the mammography rates were only 60% for Whites and 58% for Blacks. In those plans with the fewest number of Black patients, the White and Black mammography rates for women were much higher: 76% and 74%, respectively. This study suggests that an important source of healthcare disparities is the site of care, in that the investigators documented that Blacks and Whites were treated in different settings, that the care provided in settings where Blacks received more care was lower quality overall, and that the aggregate differences in care between Blacks and Whites overall was explained by differences in care setting.

Studies That Use Multi-Variable or Hierarchical Modelling to Disaggregate Structural Effects from Race/Ethnicity Effects

Some other studies have used multivariable methods to disaggregate the effects of treatment site from the effects of race. Skinner et al, for instance, examined rates of knee arthroplasty for several groups of Medicare beneficiaries, noting that the rates of knee arthroplasty for White men were more than twice that for Black men (4.82 vs 1.84 per 1000).[15] The investigators then assessed whether the fact that Blacks and Whites reside in different geographic regions of the country explains the overall large difference, under the hypothesis that the overall quality of care probably varies between regions. Specifically, they hypothesized that Blacks predominantly reside in regions with low rates of knee arthroplasty, while Whites reside in regions with high rates of arthroplasty. Stratifying at the level of the Hospital Referral Region, the investigators demonstrated that clustering of Black patients in low arthroplasty regions led to 25% of the total racial differences in care quality.

Bradley et al analyzed data from a

representative sample of patients with acute myocardial infarction, analyzing at the hospital level, rather than the small geographic unit. The authors observed that overall times, with variances adjusted for clustering of patients within hospital, were greater for Blacks than Whites in terms of time for 'door to drug' (+7.3 minutes, 6.4–8.3) and 'door to balloon' (+18.9 minutes, 16.5–21.4). Then, they re-analyzed their findings in hierarchical models that included random effects for each hospital, and found that the difference between Blacks and Whites was explained by 14% and 33%, respectively. This result is consistent, the authors argued, with overall differences reflecting in part "differences between the hospitals in which patients were treated."[14]

In both of these studies, statistical methods were used to account for the clustering of Blacks and Whites in different care settings, and in each case, less than half of the difference in care quality between Blacks and Whites appears to be due to differences in care setting or geographic location.

DISCUSSION

Determining the causes of health disparities is an important first step in the creation of programs to reduce them. At the time of the Institute of Medicine's report on Unequal Treatment, few studies had examined to what extent differences in treatment might be due to differences in care settings between Blacks and Whites. Moreover, the hypothesis was not really widely considered. Since that time, a number of studies have provided evidence that suggests that at least some of healthcare disparities are due to such differences. To the extent that Whites and Blacks receive their care in different settings and those settings vary in their quality, specific interventions might be considered to improve the care in those latter settings. However, more studies are needed before that determination can be made.

REFERENCES

1. McGlynn EA, Asch SM, Adams J, et al. The quality of health care delivered to adults in the United States. *N Engl J Med.* 2003; 348(26):2635–2645.
2. Jencks SF, Cuerdon T, Burwen DR, et al. Quality of medical care delivered to Medicare beneficiaries: a profile at state and national levels. *JAMA.* 2000;284(13):1670–1676.
3. Bach PB, Cramer LD, Warren JL, Begg CB. Racial differences in the treatment of early-stage lung cancer. *N Engl J Med.* 1999; 341(16):1198–1205.
4. Schneider EC, Zaslavsky AM, Epstein AM. Racial disparities in the quality of care for enrollees in medicare managed care. *JAMA.* 2002;287(10):1288–1294.
5. Aaron KF, Clancy CM. Improving quality and reducing disparities: toward a common pathway. *JAMA.* 2003;289(8):1033–1034.
6. Fiscella K, Franks P, Gold MR, Clancy CM. Inequality in quality: addressing socioeconomic, racial, and ethnic disparities in health care. *JAMA.* 2000;283(19):2579–2584.
7. Lurie N, Buntin MB. Health disparities and the quality of ambulatory care. *N Engl J Med.* 2002;347(21):1709–1710.
8. Agency for Health Care Policy Research. *Understanding and Eliminating Minority Health Disparities.* Rockville, Md: Dept of Health and Human Services; 1999. RFA HS-00-003.
9. Bach PB, Pham HH, Schrag D, Tate RC, Hargraves JL. Primary care physicians who treat Blacks and Whites. *N Engl J Med.* 2004; 351(6):575–584.
10. Birkmeyer JD, Siewers AE, Finlayson EV, et al. Hospital volume and surgical mortality in the United States. *N Engl J Med.* 2003; 346(15):1128–1137.
11. Birkmeyer JD, Stukel TA, Siewers AE, Goodney PP, Wennberg DE, Lucas FL. Surgeon volume and operative mortality in the United States. *N Engl J Med.* 2003;349(22):2117–2127.
12. Chandra A, Skinner J. *Geography and Racial Health Disparities.* Cambridge, Mass: National Bureau of Economic Research; 2003. NBER Working Papers No. w9513.
13. Heslin K, Andersen RM, Ettner SL, Cunningham WE. Racial and ethnic differences in access to physicians with HIV-related expertise: findings from a nationally representative study [abstract]. Paper presented at the Academy Health Meeting; June 27–29, 2003; Nashville, Tennessee.
14. Bradley EH, Herrin J, Wang Y, et al. Racial and ethnic differences in time to acute reperfusion therapy for patients hospitalized with myocardial infarction. *JAMA.* 2004;292(13): 1563–1572.
15. Skinner J, Weinstein JN, Sporer SM, Wennberg JE. Racial, ethnic, and geographic disparities in rates of knee arthroplasty among Medicare patients. *N Engl J Med.* 2003; 349(14):1350–1359.