THE HENRY J. KAISER FAMILY FOUNDATION

AMERICAN COLLEGE of CARDIOLOGY FOUNDATION

RACIAL/ETHNIC DIFFERENCES IN CARDIAC CARE: THE WEIGHT OF THE EVIDENCE

HIGHLIGHTS

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Overview

Numerous studies over the past two decades have documented racial and ethnic differences in care for heart conditions. To assess the quality of the evidence and summarize the information for a physician audience, The Henry J. Kaiser Family Foundation collaborated with the American College of Cardiology Foundation to review the body of research on racial/ethnic differences in cardiac care. This review is one component of an initiative to raise physician awareness about disparities in medical care.

REVIEW STRATEGY

- An advisory committee of researchers and physicians developed criteria for including studies in the review and for evaluating the strength of individual studies.
- Two teams of research analysts independently reviewed the studies and evaulated the strength of the evidence provided by each study.

Inclusion Criteria

- Studies included in the review were conducted in the U.S., were published in peer-reviewed journals, indicated that a primary purpose was to study racial/ethnic differences in cardiac care, reported original findings, presented quantitative and comparative data, and identified specific racial/ethnic groups for comparison to whites or other racial/ethnic groups.

Criteria for Evaluating the Evidence

- Studies classified as strong had well-defined parameters, internal validity, and measured and controlled for critical variables (e.g., a strong study based on clinical data would have controlled for age, insurance status, co-morbidities, and severity of heart disease—using a recognized measure such as Killip class or RAND appropriateness criteria—and would have used multivariate analysis to adjust for these variables simultaneously).

The Body of Evidence

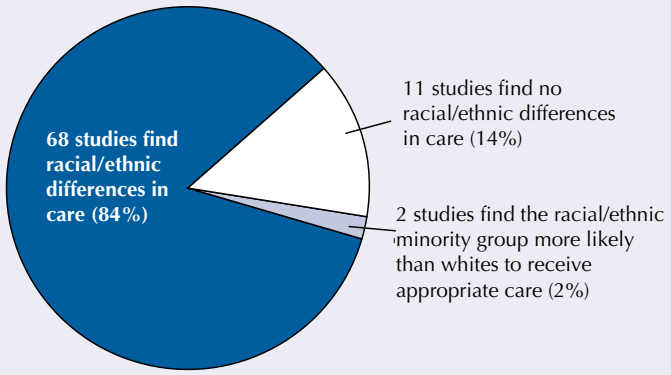
- Eighty-one of the 158 studies produced from a comprehensive literature search met the inclusion criteria and comprised the body of evidence for the review.
- Most of the studies investigated more than one cardiac procedure or treatment. Of the 81 included studies, 41 include data on diagnostic procedures, 63 include data on revascularization (of which 38 include data on PTCA, 44 include data on CABG, and 29 include data on combined procedures), 14 include data on thrombolytic therapy, 11 include data on drug therapy and 9 include data on other cardiac procedures and treatments, resulting in a total of 138 separate analyses.

Summary of Findings

- The majority of the peer-reviewed studies investigating racial/ethnic differences in cardiac care are methodologically strong.
- Most of the studies compare African Americans to whites.
- Most of the studies are based on clinical data.
- The strongest studies provide credible evidence that African Americans are less likely than whites to receive diagnostic procedures, revascularization procedures and thrombolytic therapy, even when patient characteristics are similar.

Figure 1

Evidence of Racial/Ethnic Differences in Cardiac Care, 1984-2001



Total= 81 studies

The Weight of the Evidence

- Of the 81 studies investigating racial/ethnic differences in cardiac care from 1984 to 2001, 68 find racial/ethnic differences in cardiac care for at least one of the minority groups under study.
- Of the 68, 46 find differences in cardiac care for all of the procedures and treatments investigated, and 22 find differences in cardiac care for some procedures and treatments and not others.
- The 13 remaining studies include 11 that find no racial/ethnic differences in cardiac care,[1] and two that find the racial/ethnic minority group more likely than whites to receive appropriate care.[2]

Evidence on Latinos, Asians, and Native Americans

- Of the 81 studies investigating racial/ethnic differences in cardiac care from 1984 to 2001, 21 include data on Latinos, 11 include data on Asians and four include data on Native Americans.
- The nine methodologically strong studies with data on Latinos provide mixed evidence, with half finding Latinos less likely than whites to undergo cardiac procedures and treatments and half finding no difference between Latinos and whites.
- The five strong studies with data on Asians consistently suggest that Asians are as likely as whites to undergo cardiac procedures and treatments.
- Only one strong study includes data on Native Americans.

Figure 2

Studies Investigating Racial/Ethnic Differences in Cardiac Care, 1984–2001‡

Racial/Ethnic Groups Studied[a]	
White + African Americans only	54
African Americans	74
Latinos	21
Asians	11
Native Americans	4
Summary groupings	10

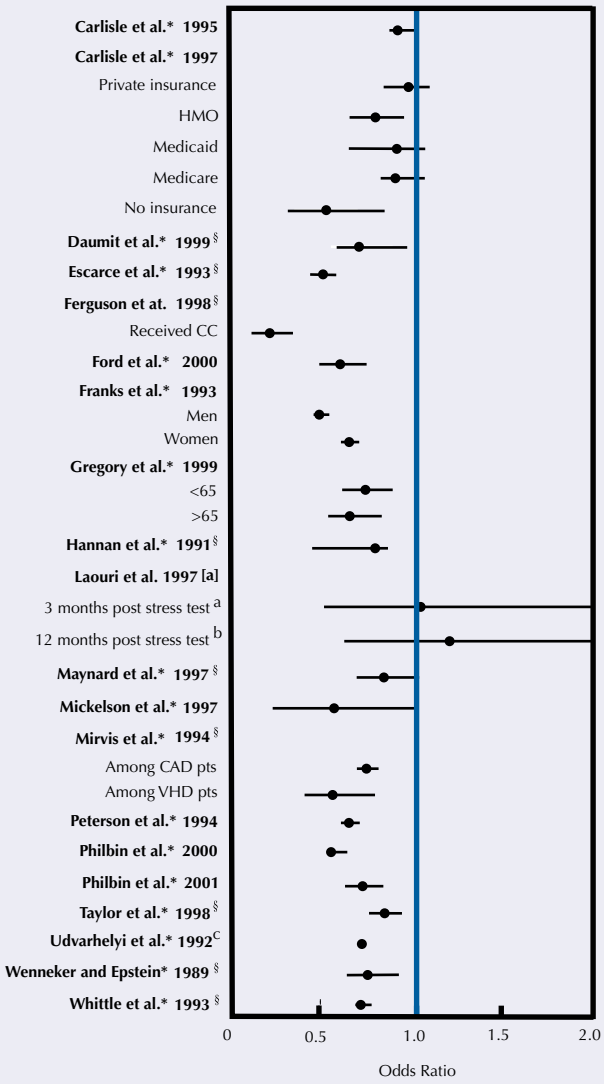
[a]A study may appear more than once
‡Evidence from studies published 1984–2001.

Diagnostic Procedures

- Twenty-four of the 41 studies of cardiac catheterization and angiography rates are methodologically strong.
- Of the 24, 19 studies find that at least one racial/ethnic minority group is less likely to undergo cardiac catheterization or angiography than whites, even when age, insurance, co-morbidities and/or disease severity are taken into account.
- African Americans are less likely than whites to undergo catheterization or angiography in 15 of the 20 strong studies that calculate odds ratios to compare use of diagnostic tests (the statistically significant ORs range from 0.23 to 0.85; Figure 3).[3]

Figure 3

Odds Ratios for Selected Strong Studies: Diagnostic Procedures (African Americans/Whites)



*Study analyzes more than one procedure or treatment and appears in more than one table.
§Odds ratio findings taken from Kressin and Petersen. *Annals of Internal Medicine,* 2001.
[a]Odds ratio: AA/W 1.05 (0.54–2.06).
[b]Odds ratio: AA/W 1.24 (0.64–2.40).
[c] The authors computed relative risks, which are comparable to odds ratios when the events are rare. Both measure the strength of an association between a factor and an outcome.

NOTE: Studies selected for this figure are all strong studies that used odds ratios for analyzing statistical differences between African Americans and whites. An odds ratio of 1.0 means there is an equal likelihood of receiving the procedure or treatment. An odds ratio of <1.0 means African Americans are less likely to receive the procedure or treatment.

Revascularization Procedures

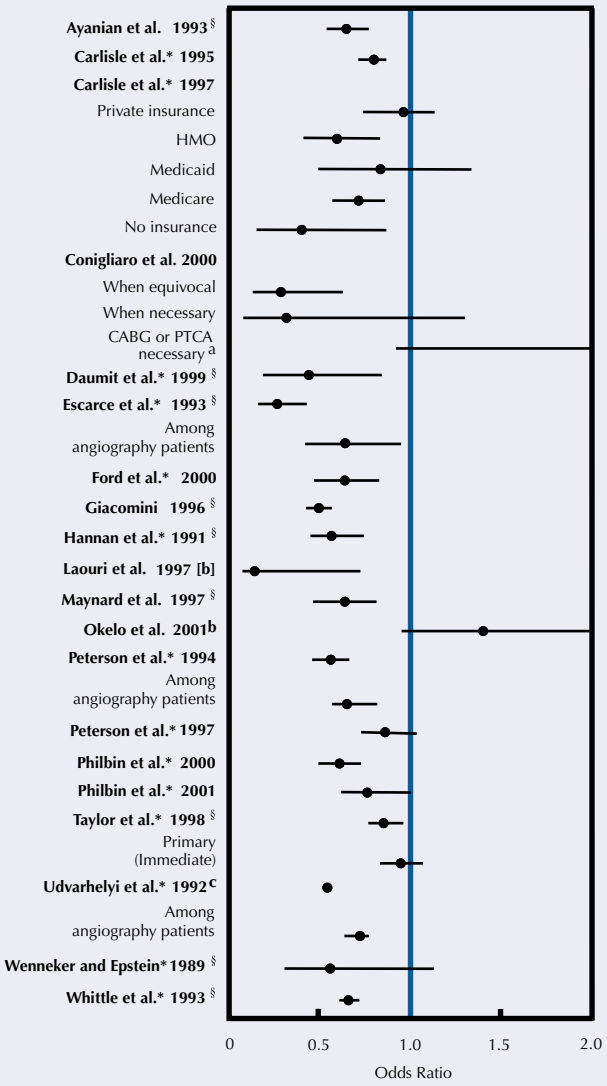
- The body of evidence on racial/ethnic differences in cardiac care is most extensive for revascularization.
- Nearly 80 percent (63 of 81) of the studies in the review analyze revascularization rates.

PTCA

- Twenty-three of the 38 studies of PTCA rates are methodologically strong.
- Of the 23, 19 studies find that at least one racial/ethnic minority group is less likely to undergo PTCA than whites, even after adjustments for age, insurance, co-morbidities, and/or disease severity.
- African Americans are less likely than whites to undergo PTCA in 13 of the 20 strong studies that calculate odds ratios to compare PTCA use (the statistically significant ORs range from 0.20 to 0.87; Figure 4).[4]

Figure 4

Odds Ratios for Selected Strong Studies: PTCA (African Americans/Whites)



* Study analyzes more than one procedure or treatment and appears in more than one table.
§ Odds ratio findings taken from Kressin and Petersen. *Annals of Internal Medicine,* 2001.
a Odds ratio: AA/W 4.50 (0.91-22.29).
b Odds ratio: AA/W 1.42 (0.96-2.11).
c The authors computed relative risks, which are comparable to odds ratios when the events are rare. Both measure the strength of an association between a factor and an outcome.

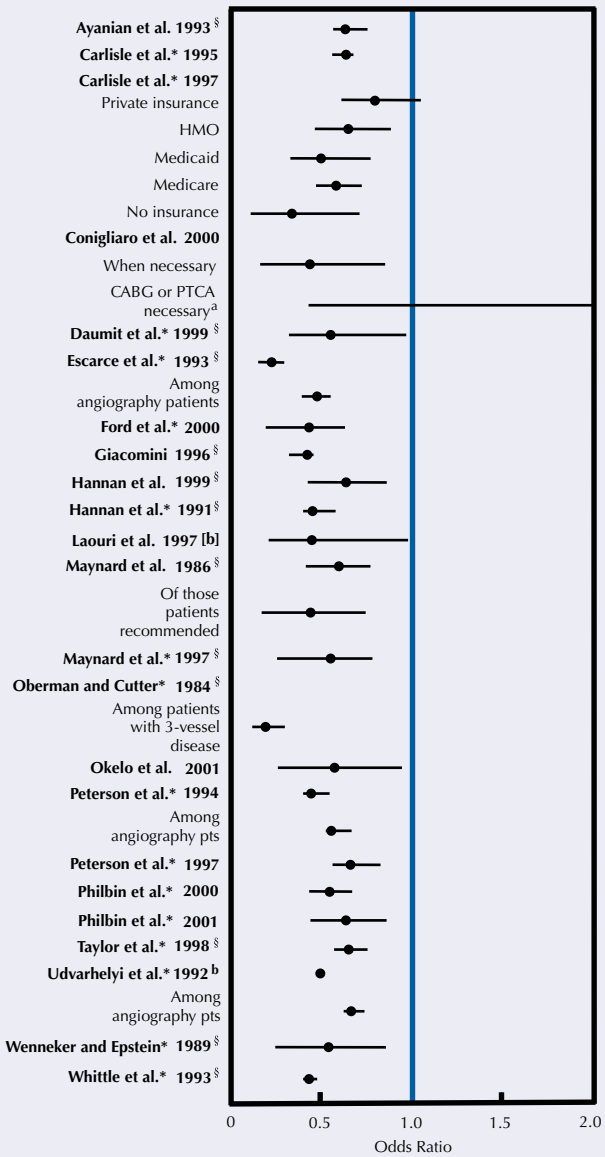
NOTE: Studies selected for this figure are all strong studies that used odds ratios for analyzing statistical differences between African Americans and whites. An odds ratio of 1.0 means there is an equal likelihood of receiving the procedure or treatment. An odds ratio of < 1.0 means African Americans are less likely to receive the procedure or treatment.

CABG

- Twenty-six of the 44 studies of CABG rates are methodologically strong.
- Of the 26, 24 studies find that at least one racial/ethnic minority group is less likely to undergo CABG than whites, even after adjustments for age, insurance, co-morbidities and/or disease severity.
- African Americans are less likely than whites to undergo CABG in 21 of the 23 strong studies that calculate odds ratios to compare CABG use (the statistically significant ORs range from 0.26 to 0.68; Figure 5).[5]

Figure 5

Odds Ratios for Selected Strong Studies: CABG (African Americans/Whites)



* Study analyzes more than one procedure or treatment and appears in more than one table.
§ Odds ratio findings taken from Kressin and Petersen. Annals of Internal Medicine, 2001.
a Odds ratio: AA/W 2.26 (0.42-12.11).
b The authors computed relative risks, which are comparable to odds ratios when the events are rare. Both measure the strength of an association between a factor and an outcome.

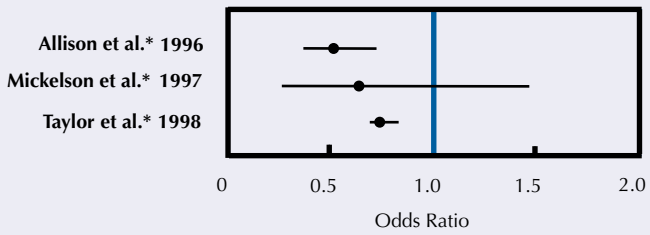
NOTE: Studies selected for this figure are all strong studies that used odds ratios for analyzing statistical differences between African Americans and whites. An odds ratio of 1.0 means there is an equal likelihood of receiving the procedure or treatment. An odds ratio of < 1.0 means African Americans are less likely to receive the procedure or treatment.

Thrombolytic Therapy

- Five of the 14 studies of thrombolytic therapy are methodologically strong.
- Of the five, four studies find that at least one racial/ethnic minority group is less likely than whites to receive thrombolytic therapy, even after controlling for age, insurance, co-morbidities and/or disease severity.
- African Americans are less likely than whites to receive thrombolytic therapy in two of the three strong studies that calculate odds ratios to compare procedure use (the statistically significant ORs range from 0.51 to 0.76; Figure 6).[6]

Figure 6

Odds Ratios for Selected Strong Studies: Thrombolytic Therapy (African Americans/Whites)



* Study analyzes more than one procedure or treatment and appears in more than one table

NOTE: Studies selected for this figure are all strong studies that used odds ratios for analyzing statistical differences between African Americans and whites. An odds ratio of 1.0 means there is an equal likelihood of receiving the procedure or treatment. An odds ratio of < 1.0 means African Americans are less likely to receive the procedure or treatment.

Drug Therapy and Other Cardiac Procedures

- Four of the 11 studies of drug therapy are strong.
- Three of the nine studies of other cardiac procedures and treatments, such as care for congestive heart failure, are strong.
- Evidence of racial/ethnic disparities in drug therapy and other cardiac procedures and treatments is mixed.

Conclusion

Evidence that disparities remain after controlling for clinical and socioeconomic factors raises questions for many in the medical community who are concerned that the race/ethnicity of a patient could, in and of itself, be prompting differences in physician behavior. Although bias and discrimination are often cited as factors that may be responsible for health care disparities, that conclusion cannot be drawn from the studies examined in this report. There is an abundance of evidence that racial/ethnic variations in medical care are infinitely more complex (IOM, 2002). Race/ethnicity is intertwined with many dimensions of life in the United States and the influence of race/ethnicity on receipt of cardiac care may vary depending on any number of circumstances.

Research to investigate underlying causes, subsequent health outcomes, and effective interventions is an important next step in efforts to reduce racial/ethnic disparities in medical care. In addition, more research is needed to provide definitive information on the use of cardiac services by Latinos, Asians and Native Americans. However, this research should not delay the uniform application of proven guidelines for optimal cardiac care without regard to race or ethnicity; nor should it delay efforts to address known barriers to health care access, such as lack of insurance coverage.

It is likely that a mix of patient, provider, and health system factors contribute to disparities in care. Some of these factors may be beyond the control of the physician, such as the varying scope of insurance benefits, patient preferences, or the availability of high-tech cardiac equipment in hospitals used most often by people of color. However, other factors may be more directly within the physician's control such as patient-provider communication, practice location decisions, or biases in the diagnostic or referral process. Physicians, therefore, play an important role in efforts to understand why disparities occur and in implementing strategies that seek to assure the highest quality medical care for every individual.

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[1] The 11 studies that find no racial/ethnic difference in cardiac care are Bearden et al., 1994; Carlisle et al., 1999; Davis et al., 2001; Gillum et al., 1997 [a]; Griffiths et al., 1999; Laouri et al., 1997 [a]; Leape et al., 1999; Marks et al., 2000; Peniston et al., 2000; Taylor et al., 1997; and Watson et al., 2001.

[2] The two studies that find the racial/ethnic minority group less likely than whites to be hospitalized are Bourassa et al., 1993 and Wolinsky et al., 1997.

[3] The studies in which the odds of a cardiac diagnostic test did not statistically differ between African Americans and whites are Carlisle et al., 1995; Laouri et al.[a], 1997; Maynard et al., 1997; and Mickelson et al., 1997. Carlisle, et al., 1997 find that African Americans are less likely than whites to undergo catheterization if they are HMO patients or uninsured, but not if they had private insurance, Medicaid, or Medicare.

[4] The studies in which the odds of a PTCA did not statistically differ between African Americans and whites are Okelo et al., 2001; Peterson et al., 1997; Philbin et al., 2001; Taylor et al., 1998; and Wenneker and Epstein, 1989. Carlisle et al., 1997 find a difference among HMO, Medicare and uninsured patients, but not among privately insured or Medicaid patients. Conigliaro et al., 2000 find a difference when PTCA is equivocal, but not when necessary or when CABG or PTCA are necessary.

[5] Carlisle et al., 1997 find a difference among HMO, Medicare, Medicaid, and uninsured patients, but not among privately insured patients. Conigliaro et al., 2000 find a difference when CABG is necessary, but not when CABG or PTCA is necessary.

[6] The study in which the odds of thrombolytic therapy does not statistically differ by race is Mickelson et al., 1997.

For more information about the initiative to raise physician awareness about racial/ethnic disparities in medical care, visit www.kff.org/whythedifference.

Full citations are available from the report *Racial/Ethnic Differences in Cardiac Care: The Weight of the Evidence.* Free copies of the report (#6040) are available on The Henry J. Kaiser Family Foundation's website at www.kff.org or by calling the Foundation's Publication Request Line at (800) 656-4533.