

Racial Disparities in the Content of Primary Care Office Visits

Peter Franks, MD,¹ Kevin Fiscella, MD, MPH,^{2,3} Sean Meldrum, MS²

¹Department of Family and Community Medicine, Center for Health Services Research in Primary Care, University of California, Davis, Calif, USA; ²Department of Family Medicine, Rochester Center to Improve Communication in Health Care, University of Rochester, Rochester, NY, USA; ³Department of Preventive and Community Medicine, University of Rochester, Rochester, NY, USA.

BACKGROUND: Little is known about racial disparities in primary care at the level of the office visit.

OBJECTIVE: To assess racial disparities in the receipt of commonly performed/recommended procedures during routine primary care office visits and examine trends in disparities over time.

DESIGN, SETTING, AND PATIENTS: The sample included 88,303 visits by adults to 3,260 primary care physicians in office-based practices in the National Ambulatory Medical Care Surveys, 1985, 1989, 1990, 1991, 1992, and 1995 to 2001.

MEASUREMENTS: Adjusted odds for receipt or recommendation of commonly performed office procedures.

RESULTS: During the years 1985 to 2001, African Americans, compared with whites, had lower odds of receiving a Pap test (odds ratio (OR) 0.81; 95% confidence interval (CI) 0.70 to 0.93), rectal exam (OR 0.67; 95% CI 0.56 to 0.80), smoking cessation counseling (OR 0.80; 95% CI 0.66 to 0.96), and mental health advice (OR 0.51; 95% CI 0.38 to 0.69), but had higher odds for visual screening (OR 1.38; 95% CI 1.08 to 1.77), weight advice counseling (OR 1.27; 95% CI 1.13 to 1.44) and receiving a follow-up appointment (OR 1.45; 95% CI 1.29 to 1.64). These findings were not appreciably altered by adjustment for physician practice characteristics including percent African American or Medicaid patients. Disparities disfavoring African Americans in cholesterol testing and smoking cessation observed during 1985 to 1992 were not observed in 1995 to 2001.

CONCLUSIONS: The findings suggest that race is associated with the type of primary care received by patients, at least for selected procedures, with evidence that some disparities have diminished over time.

KEY WORDS: primary care; racial disparities.

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In its report on racial disparities, the Institute of Medicine concluded that "racial and ethnic minorities tend to receive a lower quality of health care than nonminorities, even when access-related factors, such as patients' insurance status and income, are controlled."¹ Most investigations of disparities have focused on technological and hospital care, where evidence suggests that some disparities may be decreasing.^{2,3}

Teasing out the relative contribution of provider and patient factors is challenging and relatively few studies have attempted to isolate the potential contribution of primary care provider bias to disparities. Based on data from directly observed office visits among Ohio family physicians, Williams et al.⁴ failed to find racial disparities in provision primary care services although physicians spent less time with African-American patients planning treatment, providing health

education, chatting, assessing patients' health knowledge, and answering questions.⁵ Other studies using different methodologies show evidence of disparities among primary care providers.⁶⁻¹⁰ These studies, however, have been limited by selected physician samples, small sample sizes, and patient recall.

Because of the limited information about possible disparities in primary care, and conflicting results from existing primary care studies, we assessed disparities in primary care using national data for primary care office visits. These data primarily reflect procedures recommended or conducted by the physician at the time of the visit. We also examined whether there have been changes in disparities over the last 20 years, a time period that has seen increasing attention given to the problem of disparities in care.

METHODS

Sample

The data for this study were derived from the National Ambulatory Medical Care Surveys (NAMCS) for 1985 to 2001. The survey was not conducted from 1986 to 1988 and different versions were used in 1993 and 1994. A nationally representative sample of office-based physicians completed a short survey on approximately 20 patient encounters. Complete details about the surveys are available at <http://www.cdc.gov/nchs/about/major/ahcd/ahcd1.htm>

The subset of encounters selected for this analysis were visits by African-American or white patients 18 years of age and older to primary care physicians (internists, family physicians, and obstetrician-gynecologists). Visits that were the result of a referral were excluded (given our focus on primary care). Elements were selected for analysis based on a review of the current literature on racial disparities and those activities performed frequently enough in the surveys to generate stable estimates. These included advice giving (exercise, diet, cholesterol, smoking cessation, breast health, and mental health), prevention procedures (Pap test, mammogram in women over 40 years, breast examination, pelvic examination, rectal examination, blood pressure check, vision examination, cholesterol test, and prostate-specific antigen testing in men over 50 years), visit duration, and follow-up plans (specific follow-up and referral to another physician).

Case-Mix and Competing Demands Adjustment

Case-mix adjustment was based on the Ambulatory Care Groups (ACG) System¹¹ using the Ambulatory Diagnostic Groups (ADGs) of the ACG system. The ADGs comprise 32 diagnostic and preventive clusters to which each International Classification of Diseases diagnostic and preventive code can

The authors have no conflicts of interest to report. Address correspondence and requests for reprints to Peter Franks: Department of Family and Community Medicine, Center for Health Services Research in Primary Care, University of California, Davis, 4860 Y Street, Suite 2300, Sacramento, CA 95817. (e-mail: pfranks@ucdavis.edu).

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Table 1. Characteristics of the Primary Care Patients and Their Physicians by Race

Characteristic	African Americans	Whites
N (%)	9,111 (10.6)	79,192 (89.4)
Age (mean)	47.6	49.9
Female	71.1	67.5
Medicaid	19.7	5.7
Medicare	20.1	23.1
Rural	19.7	26.5
Region		
Northeast	16.9	19.9
Midwest	21.7	26.3
South	50.8	31.5
West	10.6	22.4
Case-mix (mean numbers)		
Medications prescribed	1.60	1.50
ADGs coded	1.72	1.73
Seen previously	88.7	90.6
Physician specialty		
Family/general practice	39.1	45.8
Internal medicine	42.7	35.5
Obstetrics and gynecology	18.2	18.8

Except where indicated, numbers are percentages, which are adjusted for sampling strategy. All differences, except number of ADGs coded, are statistically significant ($P < .05$).

ADGs, Ambulatory Diagnostic Groups.

be uniquely assigned. Each patient is assigned a series of dummy (0, 1) values for each ADG depending on the up to three diagnoses assigned by the physician for the visit. Ambulatory Diagnostic Groups have previously been used to adjust case-mix for several studies involving NAMCS.^{12–15} Comorbidity measured in this way has been found to increase with patient age and distinguishes type of primary care delivery site by morbidity burden.¹⁴ We also included an adjustment for number of medications prescribed, both as an additional measure of morbidity¹⁶ and a measure of competing demands;¹⁷ that is, we considered the number of medications prescribed as a proxy for the extent of issues competing for the attention of both physician and patient during the encounter. In this data set, the number of medications prescribed correlated with both number of ADGs ($r=.21$) and age ($r=.31$).

Statistical Analyses

National Ambulatory Medical Care Surveys uses a complex survey design, involving the clustering of visits within physician. The data were analyzed with STATA (Version 8.2, Stata-Corp, College Station, Tex) to adjust for both the sampling design and weights. The weights on the public-use data adjust each physician-patient encounter according to its sampling probability and the probability of physician nonresponse to yield unbiased national estimates of annual total visits. In all analyses, we adjusted for the clustering of patients within physician using the robust Huber-White sandwich estimator of variance.¹⁸ This variance estimator produces “correct” standard errors even though observations within clusters may be correlated.

The relationship between patient race (African American vs white) and each visit characteristic was examined with logistic regression, except visit duration, which was examined using linear regression. We adjusted for potential confounding by physician specialty, whether or not the patient was seen before, patient socio-demographics (age, gender, insurance

status (Medicaid or not, Medicare or not), community size (rural or not), and region of the country (NorthEast, MidWest, South, or West)), year of visit, and case-mix (based on the number of medications prescribed and the ADGs coded). In separate analyses, we examined for interactions between patient race and year of visit, the proportion of patients seen by the physician that were African American, and the proportion of patients seen by the physician that had Medicaid insurance.

RESULTS

The sample included 88,303 visits by adult patients (10.4% by African Americans) to 3,260 primary care providers (Table 1). Compared with white patients, African Americans were younger, more likely to reside in urban areas, to be female, have Medicaid coverage, reside in the South, and were prescribed more medications. African Americans were less likely to have Medicare or to have been seen previously.

Unadjusted percentages of patients receiving procedures by race are presented in Table 2. African Americans, compared with whites, were less likely to have Pap smear screening, mammography, rectal or breast exams, mental health advice, breast self-exam advice, and smoking cessation counseling. African Americans were more likely to receive blood pressure testing, visual screening, dietary counseling, and be given a scheduled follow-up appointment.

Table 2 also shows, for the entire time period, the adjusted odds ratios (ORs) that the physician performed/ordered a particular intervention. African Americans, compared with whites, had lower odds of receiving a Pap test, rectal exam, and mental health and smoking cessation advice, but had higher odds for visual screening, dietary advice counseling, and receiving a follow-up appointment. No significant interactions were observed in analyses including interactions between race of patient and the proportion of patients seen by the physician who had Medicaid insurance or were African American.

We found some evidence for improvement in disparities over time. Table 3 shows the adjusted ORs for racial disparities stratified by 2 time periods: 1985 to 1992 and 1995 to 2001. These data are not presented for procedures that were reported during only 1 time period. Table 2 shows the time period the procedure was reported; for example, mental health advice was reported only in the years 1995 to 2001. Analyses including an interaction term between time and race revealed a significant ($P < .05$) trend for a narrowing of racial disparities disfavoring African Americans only for smoking cessation counseling; racial disparity in smoking cessation counseling was no longer apparent in the 1995 to 2001 time period (Table 3). Although the interaction with time was not statistically significant ($P=.061$), disparities in cholesterol testing observed in the earlier time period were no longer statistically significant by 1995 to 2001. In 2 areas where the disparity favored African Americans (blood pressure being recorded and dietary counseling), the difference narrowed significantly.

DISCUSSION

Analyses of nationally representative data from primary care office visits show that at any 1 visit, African Americans are less likely to receive rectal examinations, Pap smears, and mental

Table 2. Characteristics of Primary Care Delivered by Race

Characteristic	N	Years	Unadjusted		Adjusted	
			African Americans (%)	Whites (%)	OR	95% CI
Pap smear	48,382	All	10.3*	14.0	0.81	0.70 to 0.93*
Mammogram	23,517	1989 to 1992, 1997 to 2001	6.5*	8.2	0.96	0.75 to 1.22
PSA testing	8,688	1995 to 2001	7.1	7.7	0.85	0.56 to 1.29
Cholesterol testing	78,201	1989 to 2001	8.4	9.2	0.93	0.78 to 1.12
Blood pressure taken	88,303	All	75.2*	72.0	1.12	0.98 to 1.30
Rectal exam	69,970	1985 to 1990, 1995 to 2000	4.4*	7	0.67	0.56 to 0.80*
Breast exam	47,833	1985 to 1990, 1995 to 2000	13.2*	16.2	0.92	0.79 to 1.06
Pelvic exam	47,833	1985 to 1990, 1995 to 2000	19.3	21.5	1.03	0.90 to 1.18
Vision screening	83,092	1985 to 2000	2.2*	1.5	1.38	1.08 to 1.77*
Mental health advice	48,547	1995 to 2001	1.4*	2.7	0.51	0.38 to 0.69*
Breast self-exam advice	28,976	1989, 1990, 1997 to 2000	4.6*	6.2	0.86	0.66 to 1.13
Cholesterol advice	48,036	1989 to 1996	5.8	5.4	1.13	0.87 to 1.47
Exercise advice	61,669	1991 to 2001	12.8	12.6	1.07	0.91 to 1.26
Diet advice	88,303	All	20.6	16.4	1.27	1.13 to 1.44*
Injury prevention advice	43,336	1995 to 2000	1.3	1.9	0.76	0.53 to 1.10
Smoking advice	78,201	1989 to 2001	3.4*	4.0	0.80	0.66 to 0.96*
Return appointment	75,616	1985 to 1996, 1999 to 2001	68.8*	60.9	1.45	1.29 to 1.64*
Referred to another MD	55,842	1985 to 1992, 1999 to 2001	4.5	5.2	0.89	0.72 to 1.10
Visit duration (mean) minutes	88,303	All	16.2	16.5	-0.46	-1.01 to 0.13

N, sample size for characteristic; Years, years question was asked; OR, adjusted odds ratio; CI, confidence interval; PSA, prostate-specific antigen.

* $P < .05$.

health advice, but are more likely to receive visual screening, dietary counseling, and a follow-up appointment. There was some improvement in racial disparities over time. Disparities disfavoring African Americans in cholesterol testing and smoking cessation counseling were not observed in more recent years. Interestingly, racial disparity in actual smoking cessation has also recently narrowed.¹⁹

The reasons for disparities in some areas, but not others are not known. Significant disparities were observed for procedures involving intimate physical (Pap testing and rectal examination) or emotional contact (mental health counseling). Racial disparity was also observed in smoking cessation counseling, but this disparity was confined to earlier years of the survey. Whether greater social distance may account for disparities in some of these procedures is not known.²⁰ Social distance refers to levels of intimacy between different social groups based on friendships, partnerships, and cultural sim-

ilarity.²¹ Physicians may be less comfortable suggesting and/or performing procedures that breach traditional physical or emotional boundaries with patients from different social groups.

We were not able to evaluate racial concordance between patients and their physicians. Although African-American patients are more likely to be seen by African-American physicians, the majority of African-American patients are nonetheless seen by white physicians.^{22,23} Data are mixed regarding the benefits of patient-physician racial concordance on care.²⁴⁻²⁸ Thus, further study is needed to explore the role of social distance, including racial concordance, in primary care disparities.

Racial disparity in smoking cessation counseling has been previously noted using national data,²⁹ but the finding of racial disparity in Pap testing conflicts with self-report data showing no disparity.^{30,31} However, it is known that patients

Table 3. Characteristics of Primary Care Delivered by Race and Time Period

Characteristic	1985 to 1992		1995 to 2001	
	OR	95% CI	OR	95% CI
Pap smear	0.79	0.65 to 0.95	0.82	0.66 to 1.02
Mammogram	0.93	0.62 to 1.38	1.05	0.78 to 1.42
Cholesterol testing	0.70	0.49 to 0.97	1.00	0.80 to 1.26
Blood pressure taken	1.28	1.02 to 1.62	0.97	0.83 to 1.14
Rectal exam	0.67	0.47 to 0.96	0.66	0.55 to 0.81
Breast exam	0.93	0.69 to 1.25	0.90	0.76 to 1.07
Pelvic exam	1.00	0.79 to 1.27	1.03	0.87 to 1.23
Vision screening	1.24	0.84 to 1.84	1.47	1.05 to 2.04
Breast self-exam advice	0.87	0.56 to 1.34	0.85	0.62 to 1.17
Cholesterol advice	1.18	0.87 to 1.61	0.94	0.64 to 1.37
Exercise advice	1.32	0.91 to 1.90	0.95	0.81 to 1.11
Diet advice	1.46	1.19 to 1.79	1.07	0.94 to 1.22
Smoking advice	0.57	0.41 to 0.81	0.95	0.77 to 1.18
Return appointment	1.57	1.32 to 1.87	1.29	1.11 to 1.49
Referred to another MD	0.90	0.68 to 1.18	0.91	0.66 to 1.25
Visit duration (mean) minutes	-0.36	-1.35 to 0.64	-0.50	-1.06 to 0.07

OR, adjusted odds ratio for African Americans receiving procedure compared with whites; CI, confidence interval.

tend to perceive the interval since their most recent screening procedure as shorter than the true interval (known as telescoping).³²⁻³⁴ Some evidence suggests a discrepancy, by race, in the tendency to telescope.³⁵⁻³⁷ In other words, racial differences in self-reporting may mask true disparity in receipt of some preventive services.³⁸

The findings of this study are consistent with the hypothesis that race affects the type of primary care received by patients. It is possible that the observed disparities in primary care result from African-American patients obtaining care from physicians with different practice styles.²² Bach et al.²² using self-report data from a nationally representative sample of physicians and Medicare claims data, found that physicians caring for African-American patients were more likely to face a number of barriers to providing optimal care, but the authors did not report on differences in actual care. We observed that adjusting for the proportion of patients seen by each physician that were African American or that had Medicaid insurance did not appreciably alter our findings. Similarly, the absence of significant differences in visit duration suggests that these differences cannot be attributable to shorter visits for African-American patients.

African Americans were more likely to receive procedures in three areas: vision screening, dietary advice, and scheduled follow-up. Higher rates of vision screening may reflect lower access to ophthalmologic specialty care and higher rates of glaucoma, hypertension, and diabetes among African Americans.³⁸⁻⁴² Higher rates of weight advice probably reflect higher rates of obesity, particularly among African-American women.⁴³ Higher rates of scheduled follow-up may represent inadequate adjustment for case-mix or disease severity.

Interestingly, disparities (both those favoring African Americans and whites) that have narrowed over time are all related to cardiovascular risk (blood pressure, cholesterol testing, smoking cessation, and dietary counseling). We speculate that this improvement may reflect improved cardiovascular risk management over time, perhaps related to the introduction and dissemination of guidelines and/or effective new drugs (e.g., statins, smoking cessation agents). If this explanation is correct, it suggests that standardization of care through guidelines offers potential for reducing racial disparities in health care.

Given the limitations of these data, our findings likely underestimate racial disparities in primary care. Although NAMCS is a national survey of office-based care provided in the United States, analyses were conducted at the visit level, not the patient level. African Americans receive fewer visits for routine ambulatory care,⁴⁴ reflected in this data set by the lower likelihood of African Americans having been seen previously. Fewer visits mean that physicians must attend to more tasks, including preventive services, at any 1 visit with African Americans, not less. In theory, this should result in higher rates of preventive care for African Americans at any 1 visit—although with increased competing demands prevention may receive a lower priority.¹⁷ Second, in most instances the OR pointed in the direction of a disparity favoring whites; limited power may have precluded the detection of statistically significant effects in other areas. Conversely, statistical testing of 19 procedures increases the risk of chance findings labeled significant. Third, self-reported data by physicians may lead to underestimation of racial disparity in their care. A comparison of NAMCS with direct observation of office visits showed high

specificity (range 90% to 99%) for office procedures/counseling, but moderate to low sensitivity (range 0.12 to 0.84).⁴⁵ This measurement error would bias results towards the null.

Potentially, unmeasured differences in morbidity contributed to disparities in care. When confronted with greater patient morbidity, physicians spend less time on prevention¹⁷ or smoking cessation counseling,⁴⁶ conduct less depression screening,⁴⁷ and are less likely to recommend preventive services such as mammography or hormone replacement therapy.⁴⁸ However, we observed similar findings without and with adjustment for case-mix and number of medications prescribed at the visit, suggesting that confounding by these measured factors was modest. It is also possible that physicians planned to defer procedures for African Americans to the next visit as suggested by higher rates of scheduled follow-up appointments, but neglected to do so at that visit. However, adjustment for scheduled follow-up visits did not alter the findings (results not shown).

Other limitations reflect, in part, the nature of NAMCS. These include use of a short data collection form, limiting acquisition of possibly important covariates, physician (as opposed to self-identified) assessment of patient race, and the absence of direct validation of the collected data. A major limitation is the inability to assess the appropriateness of a given element of care at a given visit, especially given the incomplete assessment of competing priorities. The results are also representative of care provided by physicians in office practice, not of all patients obtaining medical care. Roughly 15% of primary care visits by African Americans are obtained in hospital clinics.¹⁴ However, the data set available to capture that information, the companion National Hospital Ambulatory Care Survey, provides no information about the specific physicians seeing the patients. Information about the characteristics of physicians seeing African-American and white patients might yield additional insight into the reasons for some of the disparities seen here.²² Last, we could not evaluate the rates of patient refusal of procedures. However, we are not aware of any data suggesting that patient refusals contribute to the disparities we observed.

In summary, these findings based on physician-reported primary care visits suggest that African Americans are less likely to receive rectal exams, Pap smears, and mental health counseling. These findings do not appear to be explained by differences in case-mix, visit duration, or physician characteristics. Analyses of time trends suggest improvement in some areas. We hope that increased awareness of possible disparities in primary care may also result in a lessening of those disparities in the future.⁴⁹

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