Primary-care Clinician Perceptions of Racial Disparities in Diabetes Care

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BACKGROUND: Primary-care clinicians can play an important role in reducing racial disparities in diabetes care.

OBJECTIVE: The objective of the study is to determine the views of primary-care clinicians regarding racial disparities in diabetes care.

DESIGN: The design of the study is through a survey of primary-care clinicians (response rate=86%).

PARTICIPANTS: The participants of the study were 115 physicians and 54 nurse practitioners and physician assistants within a multisite group practice in 2007.

MEASUREMENTS AND MAIN RESULTS: We identified sociodemographic characteristics of each clinician's diabetic patient panel. We fit multivariable logistic regression models to identify predictors of supporting the collection of data on patients' race and acknowledging the existence of racial disparities among patients personally treated. Among respondents, 79% supported the collection of data on patients' race. Whereas 88% acknowledged the existence of racial disparities in diabetes care within the U.S. health system, only 40% reported their presence among patients personally treated. Clinicians caring for greater than or equal to 50% minority patients were more likely to support collection of patient race data (adjusted odds ratio [OR] 9.0; 95% confidence interval [CI] 1.2–65.0) and report the presence of racial disparities within their patient panel (adjusted OR 12.0; 95% CI 2.5–57.7). Clinicians were more likely to perceive patient factors than physician or health system factors as mediators of racial disparities; however, most supported interventions such as increasing clinician awareness (84%) and cultural competency training (88%).

CONCLUSIONS: Most primary-care clinicians support the collection of data on patients' race, but increased awareness about racial disparities at the local level is needed as part of a targeted effort to improve health care for minority patients.

KEY WORDS: racial disparities; quality of care; quality improvement; diabetes.

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INTRODUCTION

Racial disparities in the quality of diabetes care are persistent across all sectors of the U.S. health care system. Black patients with diabetes are less likely than white patients to receive appropriate hemoglobin A1c and lipid testing^{1,2} and less likely to achieve treatment goals including glycemic, cholesterol, and blood pressure control.^{3–8} Blacks also experience worse long-term diabetes-related outcomes than whites, including diabetic retinopathy,⁹ lower extremity amputations,^{2,10,11} and chronic kidney disease.¹² Hispanics and Native Americans have also been found to receive lower-quality diabetes care, with Native Americans experiencing disproportionately high rates of lower extremity amputations, chronic kidney disease, and diabetes-related mortality.^{2,13–17}

The etiology of these racial disparities is multifactorial involving health system, provider, and patient factors, all within the context of broader social issues.¹⁸ Physicians can play an important role in addressing racial disparities in care through their direct interface with patients and the health care system. For example, clinical decisions such as whether to recommend cardiac catheterization are known to vary according to patient race and ethnicity.¹⁹ Care for black patients tends to be clustered among a small proportion of primary-care physicians, who are more likely than physicians caring predominantly for white patients to report difficulty accessing high-quality care.²⁰

Many physicians may be unaware of the important role of race in the delivery of effective health care. The vast majority of cardiovascular specialists do not acknowledge the presence of racial disparities in the treatment of their own patients.^{21,22} This may be 1 reason why health care organizations do not routinely collect patient race and ethnicity as part of clinical quality improvement.²³

The goal of this study was to evaluate the perceptions of primary-care clinicians regarding the presence and underlying sources of racial disparities in diabetes care in their own practices and to discern clinicians' views about the merits of collecting patient race and ethnicity data. We have previously

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documented substantial racial disparities in the quality of diabetes care among the patients of these clinicians.⁷ The findings from this survey are currently being used to guide ongoing interventions in this organization to reduce disparities in the quality of diabetes care and may be useful to other health care organizations embarking on similar initiatives.

METHODS

Study Setting

This survey was conducted at Harvard Vanguard Medical Associates (HVMA), an integrated multispecialty group practice consisting of 139 primary-care physicians and 14 ambulatory health centers in Massachusetts. HVMA has deployed components of the Chronic Care Model,²⁴ starting first with implementation of an electronic medical record. Data from this record were used to deliver electronic decision support to clinicians as well as to create a diabetes disease registry and conduct patient outreach.⁷ Primary-care teams, including a primary-care physician working collaboratively with a nurse practitioner or physician assistant, proactively manage diabetic patients and conduct chronic disease-planned visits. The study protocol was approved by the Human Studies Committees of HVMA and Brigham and Women's Hospital. We received a waiver of informed consent for use of the patient demographic data as it involved deidentified data only, and clinicians provided implied consent through their voluntary return of the confidential survey.

Clinician Survey

We surveyed HVMA primary-care physicians, nurse practitioners, and physician assistants during March 2007. The survey was modeled on an instrument previously developed by RAND investigators to evaluate cardiologists' views regarding racial disparities in health care.²¹ The modified instrument assessed perceptions of primary-care clinicians regarding (1) the importance of collecting patients' race and ethnicity data, (2) the extent to which patient race and ethnicity affect the quality of diabetes care for clinically similar patients, (3) the contributions of patient, physician, and health system factors to racial disparities in diabetes care within HVMA, and (4) strategies to eliminate racial disparities in diabetes care within HVMA.

Quality of diabetes care was defined as achieving an HbA1c less than 7.0%, low-density lipoprotein (LDL) cholesterol less than 100 mg/dL, and blood pressure less than 130/80 mmHg. We chose this definition based on evidence suggesting persistent racial disparities in these intermediate outcomes measures.^{7,25} We also collected clinician age, race/ethnicity, and year of graduation from medical school or equivalent clinical training degree for nurse practitioners and physician assistants. The modified instrument underwent cognitive testing on a convenience sample of 4 primary-care physicians outside of HVMA to ensure consistency in interpretation of questions.

The survey was implemented via an initial paper mailing to all 196 eligible primary-care clinicians (139 physicians, 57 nurse practitioners and physician assistants). This mailing was followed by a reminder email approximately 2 weeks later to nonresponders and a final paper mailing at 3 weeks.

Patient Variables

One goal of this survey was to determine the association between the sociodemographic features of an individual clinician's diabetic patient panel and physicians' perceptions regarding the influence of race and ethnicity on diabetes care. Patients were linked to individual primary-care physicians via a coded field within the electronic medical record. Patients were linked to an individual nurse practitioner or physician assistant based on the primary-care physician that these midlevel clinicians were partnered with via the chronic care model. We identified adult patients 18 years and older as of May 2007 with a diagnosis of diabetes and a visit with an HVMA primary-care clinician during the prior 2 years. A diagnosis of diabetes was defined as the combination of both (1) a diagnosis of diabetes mellitus in a patient's problem list and (2) a fasting plasma glucose greater than 126 mg/dL, random plasma glucose greater than 200 mg/dL, or a resulted hemoglobin A1c. We collected patients' race, insurance type, and ZIP code of residence from the electronic medical record. Race was ascertained via self-report at the time of patient registration and office visits. We linked the patients' 5-digit ZIP code of residence to data from the 2000 U.S. Census to estimate median household income.

For each primary-care physician, we calculated the proportion of his or her diabetic patients who were members of minority groups (black, Hispanic, Asian, Native American, Native Hawaiian, or Pacific Islander), the proportion of patients with household incomes lower than the 25th percentile for the population, and the proportion of patients with no insurance or Medicaid insurance (as opposed to Medicare or commercial insurance).

Data Analysis

Clinician perceptions regarding the importance of collecting patients' race and ethnicity data were dichotomized as "Yes, Definitely" or "Yes, Probably" versus "No, Probably Not" or "No, Definitely Not" to avoid problems with small cell sizes and facilitate the development of logistic regression models. Responses regarding how often quality of diabetes care differs by race and ethnicity were collected on a 5-point Likert scale ranging from "Very Often" to "Very Rarely." To facilitate comparisons with prior research,^{21,22} these responses were dichotomized by combining "Very Often" and "Somewhat Often" and considering these 2 options as a positive response. Items assessing the degree of contributions of patient, physician, and health system factors to racial disparities in diabetes care were collected using 4-point Likert scales ("A great deal," "Some," "A little," and "Not at all"). These responses were dichotomized according to those reporting "A great deal" compared to all other responses to facilitate stable estimates and comparisons with prior research.^{21,22}

To facilitate comparisons with prior studies as well as to ease interpretation of findings,^{21,22} we first categorized the proportion of clinicians' panels consisting of minority patients according to quartiles (<10%, 10% to 25%, 25% to 50%, ≥50%) and then defined panels with a high proportion of minority patients as those in the highest quartile. Patients' income distributions within clinicians' panels were categorized by identifying the distribution of estimated median household incomes across all patients and then identifying the proportion of patients

Table 1. Primary-care Clinician Respondent and Panel Characteristics

	Frequency (%)
Background	
Physician	115 (68)
Nurse practitioner or physician assistant	54 (32)
Male	50 (30)
Clinician race*	
White, not Hispanic	142 (85)
Black, not Hispanic	3 (2)
Hispanic	1 (1)
Asian/Pacific Islander	21 (13)
Years since graduation	
<11	35 (22)
11 to 20	43 (27)
20 to 27	36 (22)
>27	48 (30)
Panel level race (% nonwhite diabetic patients)	
<12.5	42 (25)
12.5 to 25	41 (24)
25 to 50	43 (25)
>50	43 (25)
Panel level income (% low income diabetic patients) [†]	
<8	41 (25)
8.0 to 13	41 (25)
13 to 32	38 (23)
>32	42 (26)
Panel level insurance (% low insurance patients) [‡]	
≥5	75 (44)

*Data not reported by 2 respondents

[†]Low income defined as an income below the 25th percentile for the population

[‡]Low insurance defined as either Medicaid coverage or uninsured

within each clinician's panel with a "low household income," defined as an income below the 25th percentile (\$40,661) for the entire population. We next categorized the distribution of this proportion of low incomes across clinician panels according to

quartiles (<8%, 8% to 13%, 13% to 32%, ≥32%), and defined panels with a high proportion of low-income patients as those in the highest quartile. The proportion of patients with either no insurance or Medicaid insurance was dichotomized based on the median across all clinicians (5%).

We used the χ^2 test to compare the distribution of responses among subgroups. We fit multivariable logistic regression models to analyze individual clinician and panel-level predictors of reporting that collection of patients' race and ethnicity information was important and that the quality of diabetes care differs by patients' race and ethnicity among patients they personally treat. All analyses were performed using SAS version 9.1.

RESULTS

We received responses from 169 primary-care clinicians, for an overall response rate of 86%, including 83% among physicians and 95% among nurse practitioners and physician assistants. The majority of respondents were physicians, predominantly white, and female (Table 1). There was substantial variation in the diversity of patient panels among individual clinicians, including race and ethnicity and household income.

Most clinicians (79%) reported that the collection of patients' race and ethnicity data was important to ensure the delivery of high-quality care for all patients (Table 2). In multivariable analyses, no personal characteristics of clinicians were associated with assigning greater importance to the collection of patients' race data; however, clinicians caring for a high proportion of minority patients (≥50%) were substantially more likely than those caring for a lower proportion of minority patients to support collection of such data (adjusted odds ratio [OR] 9.0, 95% confidence interval [CI] 1.2–65.0). Even among clinicians who did not recognize the presence of racial differ-

Table 2. Predictors of Endorsing Data Collection on Patients' Race/Ethnicity and Its Importance in Quality of Diabetes Care

	Collection of Race Data Important N (%)	Adjusted OR* (95% CI)	Diabetes Care Quality Differs by Race [†] N (%)	Adjusted OR* (95% CI)
Clinical training				
Physician	87 (76)	0.38 (0.10–1.4)	47 (43)	2.1 (0.81–5.4)
NP/PA	46 (87)	Ref	17 (32)	Ref
Clinician gender				
Male	36 (72)	0.71 (0.27–1.9)	22 (46)	1.4 (0.60–3.4)
Female	97 (82)	Ref	42 (37)	Ref
Clinician race				
White	114 (81)	1.4 (0.45–4.7)	55 (40)	2.0 (0.66–5.8)
Nonwhite	19 (76)	Ref	9 (38)	Ref
Years since graduation				
<20	63 (82)	Ref	33 (46)	Ref
≥20	66 (79)	0.76 (0.30–1.9)	30 (36)	0.47 (0.21–1.0)
Percent panel nonwhite				
<50	92 (74) [‡]	Ref	39 (33) [‡]	Ref
≥50	41 (95)	9.0 (1.2–65.0)	25 (60)	12.0 (2.5–57.7)
Percent panel low income				
<32	90 (76) [‡]	Ref	43 (38)	Ref
≥32	38 (90)	0.60 (0.12–2.9)	19 (46)	0.22 (0.05–1.1)
Percent panel Medicaid/uninsured				
<5	71 (76)	Ref	35 (39)	Ref
≥5	62 (84)	1.1 (0.39–3.0)	29 (40)	1.3 (0.57–3.0)

*Adjusted for all covariates listed in the table. OR denotes odds ratio, CI denotes confidence interval

[†]Among 154 clinicians who responded to the question regarding patients they personally treat

[‡] $p < .05$ via the χ^2 test (unadjusted analyses)

* HVMA = Refers to all 14 Harvard Vanguard Medical Associates health centers

Figure 1. Proportion of primary-care clinicians responding that quality of diabetes care differs by race and ethnicity among clinically similar patients. Data were missing for small numbers of those who did not respond to the questions regarding the U.S. health system ($n=8$), all HVMA health centers ($n=15$), the local health center ($n=8$), and patients personally treated ($n=7$).

ences in the quality of diabetes care among patients they personally treat ($n=98$), the majority (72%) support the collection of patients' race and ethnicity.

The vast majority of primary-care clinicians reported that quality of the diabetes care varies by race and ethnicity within the U.S. health care system (Fig. 1). However, fewer clinicians

reported the existence of racial disparities in diabetes care within increasingly local health care settings, with the lowest proportion of clinicians (40%) reporting racial differences in the quality of diabetes care among patients they personally treat. In multivariable analyses (Table 2), treating a high proportion of minority patients was positively associated (adjusted OR

Figure 2. Proportion of primary-care clinicians indicating that patient, physician, and health systems factors contribute a "great deal" to racial and ethnic differences in the quality of diabetes care. Responses are among the 80 clinicians who reported the presence of racial and ethnic disparities in diabetes care within Harvard Vanguard Medical Associates, defined as differences in achieving control of HbA1c, LDL cholesterol, and blood pressure.

12.0, 95% CI 2.5–57.7) with reporting the existence of racial differences among patients personally cared for, whereas increased years since graduation was negatively associated with this perception (adjusted OR 0.47, 95% CI 0.21–1.0).

Among those reporting the presence of racial disparities in the quality of diabetes care within HVMA, clinicians were much more likely to stress the importance of patient-related issues compared to physician or health systems issues (Fig. 2). Patient health behaviors were the most frequently cited (73%) factors to explain the presence of racial disparities in the quality of diabetes care. Among the physician and health systems factors, lack of time and resources to address patients' social issues was most commonly cited (39%), whereas factors more directly linked to clinicians' behaviors such as differential prescribing of medications and provision of specialty referrals were not commonly endorsed.

Among clinicians reporting the presence of racial disparities within HVMA, quality improvement programs with a specific focus on care for minority patients were more likely to be viewed as "very effective" than generic programs that do not target minority populations (41% versus 19%, Fig. 3). In contrast, among clinicians not reporting the presence of racial disparities, targeted programs were less likely to be viewed as "very effective" than generic programs (23% versus 41%). Programs to increase clinician awareness of racial disparities in diabetes care and promote cultural competency among clinicians were viewed as very or somewhat effective strategies by large majorities of clinicians (84% and 88%, respectively).

DISCUSSION

Improving the care of minority patients with diabetes is an important component of efforts to reduce racial disparities in health outcomes and will require the efforts of primary-care clinicians.^{26,27} We found that most primary-care clinicians endorsed the collection of patients' race and ethnicity data to improve the quality of diabetes care, concordant with regulations in other settings that require hospitals to collect these self-reported data.²⁸ Whereas the vast majority recognized the existence of racial disparities within the U.S. health system, only slightly more than one third acknowledged their presence among patients they personally treat. Caring for a more racial and ethnically diverse patient panel predicted support for the collection of patient race and ethnicity data, as well as acknowledgement of racial disparities in the quality of diabetes care within the providers' own panels.

Support for collection of race and ethnicity data among clinicians in this study complements similar support among patients for such activities²⁹ and suggests that health care systems should implement programs to collect these data as a part of routine clinical care.³⁰ Our survey findings are consistent to prior surveys of cardiovascular specialists in some respects but different in others. Like our survey, prior studies of cardiovascular specialists found a substantially higher proportion acknowledging racial differences in cardiac care among patients nationally (34%) than among patients they personally treat (5%).^{21,22} Yet, compared with these

Figure 3. Proportion of primary-care clinicians reporting the effectiveness of various strategies to reduce racial and ethnic differences in the quality of diabetes care. *Non-Targeted QI* refers to quality improvement with no specific focus on providing care for minority patients. *Clinician Awareness* refers to increasing recognition of the importance of race in diabetes care among clinicians, and *Cultural Competence* refers to increasing the cultural competency of clinicians.

cardiovascular specialists, a substantially higher proportion of primary-care clinicians in our study acknowledged racial disparities both at the national level (88%) and among patients they personally treat (40%). This difference may reflect any number of factors including differences in the nature and duration of clinical relationships in primary care, the orientation of primary-care clinicians toward “whole person” rather than disease-oriented care, and a resulting awareness of the role of social factors on patient care and health, or differences in the focus and content of scholarly articles and meetings that primary-care clinicians engage with.

We also found that clinicians cited patient factors more commonly than physician or health system factors as contributors to racial disparities. A similar pattern was seen in a survey of nephrologists caring for patients with end-stage renal disease regarding the reasons for racial disparities in access to renal transplantation.³¹ Whereas racial differences in patient adherence to treatment recommendations for diabetes have been documented,^{32,33} there is evidence that providers play a role in disparities through differential clinical recommendations¹⁹ and use of effective medications.³⁴ The predilection of clinicians to assign responsibility to patients may reflect the same “not me” phenomenon that led to finding a significantly higher acknowledgment of racial disparities in the national health system than in the local health care environment.

These survey results may guide the design of quality improvement programs to reduce racial and ethnic disparities in the quality of diabetes care. Our findings suggest that clinician education regarding the importance of racial disparities within the local health care setting is needed, potentially including feedback on data from their own health center or patient panel. The fact that caring for a greater number of minority patients was strongly associated with acknowledging the presence of racial disparities highlights the importance and educational value of increased exposure to the complex issues surrounding delivery of health care to diverse populations.

Potential strategies to increase exposure to this issue and provide the tools to address the barriers highlighted in this study may include provider feedback regarding disparities within their local health care setting coupled with cultural competency training to improve communication skills and provide insights into delivering care in challenging situations.^{35,36} Indeed, many of the clinicians in our study endorsed the use of these strategies to improve health care for minority patients. This cultural competency training may involve a combination of small group discussions of these issues among clinicians, role playing, and instruction on working effectively with translators. In addition, community site visits can serve as a powerful tool to increase clinician awareness of the role that social factors can play in effective chronic disease management. These programs to educate clinicians and provide tools to address disparities must focus on the distinctive issues encountered when caring for blacks, Hispanics, Asians, or Native Americans and must raise clinicians' awareness of their own clinical thinking processes and how these may differ on the basis of any number of their patients' presenting characteristics and behaviors. We have developed clinician-specific reports on racial disparities in control of hemoglobin A1c, LDL cholesterol, and blood pressure for patients with diabetes at HVMA, and we are currently evaluating a randomized intervention to provide these data to primary physicians coupled with cultural competency training.

Whereas our study is strengthened by the high response rate and availability of patient data, it also had some limitations. We surveyed primary-care clinicians only within a single health network, so the results may not generalize to other settings. It is possible that primary-care physicians in other settings would be less likely to support the collection of patients' race and acknowledge the importance of patient race in caring for diabetes. In particular, because we found that panel diversity was a strong predictor of reporting the existence of disparities at a local level, surveys among physicians practicing in less racially diverse communities may demonstrate results contrasting with ours. However, even among clinicians whose responses indicated no self-awareness of local racial disparities in diabetes care, the vast majority favored collecting patient race and ethnicity, suggesting that support for collecting these data will extend broadly to other settings. Similarly, the absence of a significant relationship between income distribution and acknowledging the importance of patient race in caring for diabetes may reflect the relatively high median income of our study population drawn from eastern Massachusetts. Finally, we did not assess perceptions of other members of the clinical staff, who may play an important role in racial disparities in care.³⁷

In conclusion, whereas the majority of primary-care clinicians support the collection of patient race and ethnicity data, only a minority reports the presence of racial disparities in diabetes care among patients they personally treat. Effective strategies to reduce racial and ethnic disparities should include clinician education regarding the importance of racial disparities within the local health setting as part of targeted efforts to improve health care for minority patients.

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Conflict of Interest: Dr. Sequist serves as a consultant on the Aetna External Advisory Committee for Racial and Ethnic Equality. Dr. Ayanian serves as a consultant to RTI International and DxCG.

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