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Racial/Ethnic Disparities in Medicare Beneficiaries' Care Coordination Experiences

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Background: Little is known about racial/ethnic differences in the experience of care coordination. To the extent that they exist, such differences may exacerbate health disparities given the higher prevalence of some chronic conditions among minorities.

Objective: To investigate the extent to which racial/ethnic disparities exist in the receipt of coordinated care by Medicare beneficiaries.

Subjects: A total of 260,974 beneficiaries who responded to the 2013 Medicare Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey.

Methods: We fit a series of linear, case-mix adjusted models predicting Medicare CAHPS measures of care coordination from race/ethnicity.

Results: Hispanic, black, and Asian/Pacific Islander (API) beneficiaries reported that their personal doctor had medical records and other relevant information about their care significantly less often than did non-Hispanic white beneficiaries (−2 points for Hispanics, −1 point for blacks, and −4 points for APIs on a 100-point scale). These 3 groups also reported significantly greater difficulty getting timely follow-up on test results than non-Hispanic white beneficiaries (−9 points for Hispanics, −1 point for blacks, −5 points for APIs). Hispanic and black beneficiaries reported that help was provided in managing their care significantly less often than did non-Hispanic white beneficiaries (−2 points for Hispanics, −3 points for blacks). API beneficiaries reported that their personal doctor discussed their medications and had up-to-date information on care from specialists significantly less often than did non-Hispanic white beneficiaries (−2 and −4 points, respectively).

Discussion: These results suggest a need for efforts to address racial/ethnic disparities in care coordination to help ensure high-quality care for all patients. Public reporting of plan-level performance data by race/ethnicity may also be helpful to Medicare beneficiaries and their advocates.

Key Words: CAHPS, care coordination, health disparities, Medicare, race/ethnicity

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Care coordination has been defined as "the deliberate integration of patient care activities between 2 or more participants involved in a patient's care to facilitate appropriate delivery of health care services."[1] Gaps in care coordination are common and often lead to delayed access to care, a lower likelihood of receiving preventive services, increased hospital admissions and emergency department visits, patient and provider dissatisfaction, and greater health care spending.[1–6]

Care coordination is especially important for Medicare beneficiaries, the majority of whom have ≥1 chronic conditions that require care from multiple providers in a variety of settings. Annually, Medicare beneficiaries see a median of 2 primary care providers and 5 specialists in 4 different practices.[7] Gaps in coordination among these providers and settings may lead to poor health outcomes and increased hospitalizations and associated health care expenditures.[8–10] The need to improve care coordination in the Medicare population is reflected in the recent decision by the Centers for Medicare & Medicaid Services (CMS) to reimburse primary care providers for between-visit services required to coordinate care for patients with ≥2 chronic conditions.[11] Likewise, the Affordable Care Act includes several provisions to accelerate efforts to coordinate care for individuals with multiple chronic conditions through practice models such as accountable care organizations and patient-centered medical homes.[12]

Whereas racial/ethnic disparities in both clinical process measures and some aspects of patient experiences of care (eg, access to care and patient-provider communication) are well documented,[13–18] little is known about the degree to which such disparities exist in patient-reported care coordination.

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This is important, as racial/ethnic differences in care coordination may exacerbate health disparities given the higher prevalence of certain chronic conditions among minorities, particularly hypertension and diabetes.[19] Thus, we conducted the first nationally representative study of the extent to which racial/ethnic disparities exist in the experience of coordinated care by Medicare beneficiaries. Specifically, we investigated the extent to which Hispanic, black, Asian or Pacific Islander (API), and American Indian (AI) or Alaska Native (AN) Medicare beneficiaries report different experiences with care coordination than white beneficiaries.

METHODS

Data Source and Sample

Data came from the 2013 Medicare Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey, a nationally representative stratified random sample of Medicare beneficiaries, with contracts (informally, "plans") serving as strata. Surveys are distributed by mail to Medicare Advantage (MA) (the managed care version of Medicare) and fee-for-service (FFS) beneficiaries with and without prescription drug coverage, with telephone follow-up of nonrespondents. Respondents totaled 365,441 beneficiaries (46% and 43% response rates among MA and FFS beneficiaries, respectively). Excluding respondents to the standalone prescription drug plan version of the survey, which did not include items on care coordination, left 319,991 respondents representing all forms of Medicare coverage.

Unit response rates to the 2013 survey followed patterns typical for other health surveys,[20] including higher response rates for non-Hispanic whites than for other racial/ethnic subgroups, better response rates through age 79, and lower response rates for low-income beneficiaries. All analyses used person-level poststratification weights that account for sample design and nonresponse[21,22] by matching weighted sample and enrollment populations in each Medicare contract-by-county combination on demographic characteristics, Medicaid eligibility/low-income subsidy enrollment status, enrollment in a Special Needs Plan, and zip-code level distributions of income, education, and race/ethnicity.

CAHPS surveys include screener questions so that items are asked only of respondents to whom they apply. For example, the care coordination items are preceded by screeners that ask whether respondents had blood tests or x-rays, took prescription medications, got care from multiple providers, and saw a specialist in the last 6 months. There were 45,252 respondents (14%) to whom none of the 6 care coordination items included in the 2013 Medicare CAHPS survey applied, leaving 274,739 respondents. Of these, 13,765 (5%) had missing data on care coordination, leaving a final analytic sample of 260,974 cases. Characteristics of the analytic sample, overall and by race/ethnicity, are shown in Table 1.

Measures

Care Coordination

The 6 care coordination items are shown in Table 2. Information about the development and psychometric properties of these items can be found in Hays et al.[23] Items 2 and 3, which both ask about follow-up on test results, were combined to create a single indicator. Information about the scoring of this indicator appears in the table note. Thus, we had 5 indicators (4 individual items and 1 indicator combining 2 items) of care coordination for the analyses. Each indicator was linearly transformed to a 0–100 scale before analysis. The transformed score, y, is equal to 100 times (x–a) (b–a), where the original response scale ranges from a to b and the original (untransformed) score is equal to x.

Race/Ethnicity

Hispanic ethnicity was assessed using the standard Office of Management and Budget item (*Are you of Hispanic or Latino origin or descent?*). Race was measured using an item with 5 response options: white; black or African American; Asian; Native Hawaiian or other Pacific Islander; and AI or AN. Because of sample size restrictions, the Asian and Native Hawaiian or other Pacific Islander categories were combined to form a single category of API. Respondents who endorsed Hispanic or Latino ethnicity were classified as Hispanic. Those not endorsing Hispanic or Latino ethnicity were classified as non-Hispanic white, non-Hispanic black, non-Hispanic API, non-Hispanic AI/AN, or in a multiracial category if >1 race was reported, or unknown if no race was indicated. We refer to beneficiaries in the first 5 categories as Hispanic, white, black, API, and AI/AN, and do not interpret effects for multiracial beneficiaries and those of unknown race.

Analyses

Analyses for this paper were conducted using SAS software, Version 9.4 (SAS Institute Inc., Cary, NC). We estimated 2 linear regression models for each of the 5 indicators of care coordination. The first model (model 1) controlled for age, education, eligibility for Medicaid (an indicator of limited assets and income below 150% of the federal poverty level), and the Low Income Subsidy (LIS) available under the Medicare Part D prescription drug program, whether the beneficiary received assistance in completing the survey or had a proxy respondent, self-reported general health (poor, fair, good, very good, and excellent), self-reported mental health (same response options as general health), and indicators of whether the beneficiary had ever been diagnosed with each of the following 6 chronic conditions: (1) heart attack, (2) coronary heart disease, (3) stroke, (4) cancer, (5) diabetes, and (6) chronic obstructive pulmonary disease. The second model (model 2) additionally controlled for coverage type (MA vs. FFS Medicare) and region of residence (using the 10 CMS-designated regions of the United States). On the basis of these 2 models, we calculated adjusted means for each of the 5 racial/ethnic groups (Hispanic, white, black, API, and AI/AN), and generated adjusted disparity estimates as the coefficients for each racial/ethnic group relative to the reference group of whites.

Missing Data and Imputation

In the final analytic sample, missing data on control variables other than the indicators of chronic conditions ranged from 3% to 11%. Missing data on the chronic condition

TABLE 1. 2013 Medicare Beneficiary Characteristics by Race/Ethnicity (Weighted %)

Characteristics	Overall (n = 260,974)	White[†] (n = 191,694)	Hispanic[‡] (n = 23,244)	Black[§] (n = 22,931)	API[‖] (n = 8493)	AI/AN[¶] (n = 1128)
Age (y)			***	***	***	***
≤64	14	12	23	28	7	31
65–69	25	25	24	24	26	27
70–74	21	22	20	19	25	16
75–79	16	16	14	13	18	12
80–84	12	12	10	8	13	7
85 or older	12	13	9	7	11	7
Education			***	***	***	***
Grade 8 or less	6	4	28	9	14	10
Some high school	9	8	14	17	9	16
High school graduate or GED	32	33	26	32	19	27
Some college or 2-y degree	27	28	19	26	18	31
4-y college graduate	11	11	6	7	20	8
>4-y college degree	15	16	7	10	20	8
Self-rated general health			***	***	***	***
Excellent	7	7	7	4	7	5
Very good	26	28	18	16	24	17
Good	36	37	32	37	38	33
Fair	24	22	33	33	24	31
Poor	7	6	11	10	7	14
Self-rated mental health			***	***	***	***
Excellent	23	24	18	18	20	15
Very good	32	33	23	26	30	24
Good	29	28	31	32	33	34
Fair	13	12	22	20	14	19
Poor	3	3	5	4	3	7
Chronic conditions						
Heart attack	11	12	10***	10***	7***	15
CHD	17	18	15***	14***	12***	23*
Stroke	8	8	8	10***	8	13**
Cancer	16	17	11***	14***	11***	15
Diabetes	31	28	43***	47***	39***	45***
COPD	18	18	16	19	13***	28***
Medicaid eligible	15	10	33***	31***	34***	32***
LIS eligible	3	2	5***	6***	3**	5***
Medicare Advantage	23	21	39***	25***	27***	13***
Proxy respondent status			***	***	***	**
No assistance	88	90	71	85	70	86
Proxy assistance with survey	9	6	24	11	22	10
Proxy completion of survey	4	4	5	4	8	4

All P-values compared with whites.

*$P<0.05$.

**$P<0.01$.

***$P<0.001$.

[†] (Non-Hispanic) white.

[‡] Hispanic of any race.

[§] (Non-Hispanic) black or African American.

[‖] (Non-Hispanic) Asian or Pacific Islander.

[¶] (Non-Hispanic) American Indian or Alaska Native.

AI indicates American Indian; AN, Alaska Native; API, Asian or Pacific Islander; CHD, coronary heart disease; COPD, chronic obstructive pulmonary disease; GED, general educational development high school equivalency certificate; LIS, Low Income Subsidy.

TABLE 2. Care Coordination Items Included in the 2013 Medicare CAHPS Surveys

Item 1:	In the last 6 mo, when you visited your personal doctor for a scheduled appointment, how often did he or she have your medical records or other information about your care? Never/Sometimes/Usually/Always
Item 2:	In the last 6 mo, when your personal doctor ordered a blood test, x-ray, or other test for you, how often did someone from your personal doctor's office follow-up to give you those results? Never/Sometimes/Usually/Always
Item 3:	In the last 6 mo, when your personal doctor ordered a blood test, x-ray, or other test for you, how often did you get those results as soon as you needed them? Never/Sometimes/Usually/Always
Item 4:	In the last 6 mo, did you get the help you needed from your personal doctor's office to manage your care among different providers and services? Yes, definitely/Yes, somewhat/No
Item 5:	In the last 6 mo, how often did you and your personal doctor talk about all the prescription medicines you were taking? Never/Sometimes/Usually/Always
Item 6:	In the last 6 mo, how often did your personal doctor seem informed and up-to-date about the care you got from specialists? Never/Sometimes/Usually/Always

If the response to item 2 was *never*, then the combined item 2/3 was scored as 1. If the response to item 2 was *sometimes*, then the combined item was scored 2 if item 3 was *never*, 3 if item 3 was *sometimes*, 4 if item 3 was *usually*, and 5 if item 3 was *always*. If the response to item 2 was *usually*, then the combined item was scored 3 if item 3 was *never*, 4 if item 3 was *sometimes*, 5 if item 3 was *usually*, and 6 if item 3 was *always*. If the response to item 2 was *always*, then the combined item was scored 4 if item 3 was *never*, 5 if item 3 was *sometimes*, 6 if item 3 was *usually*, and 7 if item 3 was *always*.

CAHPS indicates Consumer Assessment of Healthcare Providers and Systems.

indicators ranged from 15% to 20%. Some missing values on the chronic condition indicators were first logically imputed to "no" if a break-off in survey responses was not detected.[24] The remaining missing values on the chronic condition indicators and all missing values on other control variables were imputed using multiple imputation (PROC MI and MIANALYZE in SAS). In particular, multivariate imputation using fully conditional specification methods was employed to generate 5 datasets with complete data for all control variables. Model estimates from these 5 imputed datasets were combined to produce a final set of parameter estimates. Fully conditional specification methods are commonly used to impute missing values for both continuous and categorical variables in a dataset with an arbitrary missing data pattern,[25,26] as was the case in this study. Variables in the imputation model included all variables in the analysis model (model 2) plus sex and an indicator of the language (English, Spanish, or Chinese) in which the survey was conducted.

RESULTS

Table 1 shows beneficiary characteristics overall and by race/ethnicity. White beneficiaries were significantly older than Hispanic, black, and AI/AN beneficiaries but younger than API beneficiaries. White beneficiaries had significantly greater educational attainment than Hispanic, black, and AI/AN beneficiaries, but less attainment than API beneficiaries. All racial/ethnic minorities reported significantly worse general and mental health than white beneficiaries. Eligibility for Medicaid and LIS was significantly higher for all racial/ethnic minorities than for whites. Compared with white beneficiaries, Hispanic, black, and API beneficiaries were significantly more likely to be enrolled in MA plans (vs. FFS Medicare) and AI/AN beneficiaries were significantly less likely. All racial/ethnic minorities were significantly more likely than white beneficiaries to have had assistance completing the survey.

Table 3 shows adjusted means and disparity estimates based on the 2 regression models predicting care coordination from race/ethnicity (full results of these models appear in an appendix, Supplemental Digital Content 1, http://links.lww.com/MLR/B180). The results of model 1 show that Hispanic, black, and API beneficiaries reported that their primary care provider had medical records or other information about their care during visits significantly less often than did white beneficiaries, with adjusted disparities of -2 points for Hispanics, -1 point for blacks, and -4 points for APIs ($P<0.01$ for each vs. non-Hispanic whites). Similarly, Hispanic, black, and API beneficiaries reported timely follow-up on test results significantly less often than did white beneficiaries, with adjusted disparities of -9 points for Hispanics, -1 point for blacks, and -5 points for APIs ($P<0.01$ for each vs. non-Hispanic whites). Hispanic and black beneficiaries reported that their primary care providers helped them to manage care from various providers and services less often than white beneficiaries reported, with adjusted disparities of -2 points for Hispanics and -3 points for blacks. API beneficiaries reported that their primary care provider talked with them about all the medicines they were taking and that their primary care provider had up-to-date information on care received from specialists less often than white beneficiaries reported, with adjusted disparities of -2 and -4 points, respectively ($P<0.001$ for both measures). Deviating from the general pattern observed here in which beneficiaries from racial/ethnic minority groups reported worse care coordination than did white beneficiaries, Hispanic and black beneficiaries reported that their primary care provider had up-to-date information on care received from specialists significantly more often than white beneficiaries reported (+2 and +3 points, respectively; $P<0.001$ for each vs. non-Hispanic whites).

When coverage type and geographic indicators were added to the model (model 2), the substantive findings remained the same in all cases but 1: Whereas in model 1 there was no apparent difference between Hispanic and white beneficiaries in their reports of how often their primary care provider (PCP) talked with them about all the medications they were taking, model 2 shows that Hispanics reported these types of conversations more often than did whites.

Given the higher proportion of disabled beneficiaries under age 65 who are black and Hispanic, we conducted a subanalysis (adding age by race/ethnicity interactions to model 2) to see whether the racial/ethnic differences that we observed across the entire Medicare population were equally evident in beneficiaries under age 65 and age 65 and older. There was no evidence of heterogenous differences, with the following exceptions: (1) Hispanic beneficiaries' disadvantage relative to whites on the measure of timely follow-up on test results was greater among beneficiaries aged 65 and older than among beneficiaries younger than age 65, and

TABLE 3. Adjusted Means and Disparities on Coordination of Care Measures, 2014 Medicare CAHPS Survey

		Model 1		Model 2	
	Unweighted N	Adjusted Mean Score[†] (0–100)	Adjusted Difference From White[‡]	Adjusted Mean Score[†] (0–100)	Adjusted Difference From White[‡]
PCP has medical records during visits					
Hispanic[§]	22,031	93.96	−1.99***	94.11	−1.74***
Black[‖]	22,116	95.32	−0.63**	95.20	−0.65**
API[¶]	8052	91.72	−4.22***	91.91	−3.93***
AI/AN[#]	1058	95.07	−0.88	95.13	−0.72
White[‡] (reference)	182,833	95.95	—	95.85	—
Timely follow-up on test results ordered by PCP					
Hispanic[§]	19,357	77.02	−9.28***	77.97	−7.56***
Black[‖]	19,197	85.24	−1.06**	84.69	−0.84*
API[¶]	7040	81.17	−5.13***	81.96	−3.57***
AI/AN[#]	895	85.00	−1.30	84.16	−1.36
White[‡] (reference)	155,696	86.30	—	85.52	—
Got help from PCP’s office to manage care from multiple providers or services					
Hispanic[§]	5601	87.73	−2.17**	88.09	−1.41*
Black[‖]	4228	87.33	−2.58***	86.93	−2.56***
API[¶]	1613	88.17	−1.73	88.45	−1.04
AI/AN[#]	261	92.23	2.33	91.92	2.43
White[‡] (reference)	34,611	89.90	—	89.49	—
PCP discusses all medications you are taking					
Hispanic[§]	21,119	81.94	0.53	82.27	1.29**
Black[‖]	21,340	81.39	−0.02	80.93	−0.05
API[¶]	7562	79.27	−2.14***	79.77	−1.21*
AI/AN[#]	1030	81.57	0.15	81.28	0.30
White[‡] (reference)	176,040	81.41	—	80.98	—
PCP has up-to-date information on care from specialists					
Hispanic[§]	12,979	80.62	2.18***	81.33	3.05***
Black[‖]	10,861	81.47	3.04***	81.60	3.31***
API[¶]	4432	74.62	−3.81***	74.91	−3.38***
AI/AN[#]	592	80.28	1.84	80.83	2.54
White[‡] (reference)	113,856	78.43	—	78.29	—

Model 1 adjusts for age, education, eligibility for Medicaid, and the Low Income Subsidy available under the Medicare Part D prescription drug program, whether the beneficiary received assistance in completing the survey or had a proxy respondent, self-reported overall health, self-reported mental health, and chronic condition status. Model 2 additionally adjusts for coverage type (Medicare Advantage vs. fee-for-service Medicare) and the geographic region in which the beneficiary’s plan operates. Indicators for multiracial and unknown racial groups were included in the models but are not reported.

*$P<0.05$.

**$P<0.01$.

***$P<0.001$.

[†] Calculated by linear regression and represent the means that would be obtained if all racial/ethnic groups had the overall population mean value of all covariates other than race/ethnicity.

[‡] (Non-Hispanic) white.

[§] Hispanic of any race.

[‖] (Non-Hispanic) black or African American.

[¶] (Non-Hispanic) Asian or Pacific Islander.

[#] (Non-Hispanic) American Indian or Alaska Native.

AI indicates American Indian; AN, Alaska Native; API, Asian or Pacific Islander; PCP, primary care provider.

(2) black beneficiaries’ disadvantage relative to whites on this same measure was statistically significant only among beneficiaries aged 65 and older.

DISCUSSION

A few exceptions notwithstanding, racial/ethnic minority group members experienced more problems with their care coordination than did non-Hispanic whites, potentially increasing their risk of hospital readmissions, confusing and conflicting care plans, medical errors, and adverse health outcomes. In most cases, the racial/ethnic differences that we observed ranged from 2 to 4 points on a 0 − 100 scale. Differences of this magnitude, though small at the person level, correspond to a medium-sized effect at the plan level, where SDs of 1.8–7.1 points are observed. For example, the difference between blacks and whites on the frequency of getting assistance from a primary care provider with managing care from various providers and services is large enough that the average experience of black beneficiaries in a 50th percentile plan is like the average experience of white beneficiaries in a 23rd percentile plan, equivalent to dropping a full quartile in plan quality. Similar-sized differences on other CAHPS measures have been found to be associated with up to a 26% increase in disenrollment from Medicare health plans.[27]

More research is needed to pinpoint the causes of these disparities. Possible causes may include language and communication issues for non-English speakers or those with lower health literacy,[28–31] differential access to or selection into poorer quality plans,[32] resource constraints faced by physicians with greater proportions of minority patients,[33] cultural barriers between providers and patients,[34] and minority patients' increased tendency to seek care from smaller practices that may have less capacity to perform care coordination functions well.[35] Whatever the cause, our results suggest the need for efforts to reduce racial/ethnic disparities in care coordination, particularly for API and Hispanic patients. Such efforts could include use of care coordinators to manage the care plans of these patients and measures to ensure more effective communication and stable relationships between these patients and their primary care providers. It will also be important to track whether current financial incentives to improve care coordination, such as those provided by the Affordable Care Act and the new Medicare reimbursement codes that will allow providers to bill for care coordination activities, are effective at reducing the disparities observed in this study. Public reporting of plan-level performance data by race/ethnicity, as mandated by the Medicare Improvement for Patients and Providers Act of 2008, may also be helpful to Medicare beneficiaries and their advocates; though, there are challenges to reporting these results (eg, missing data due to small sample sizes) that must be addressed.[36] In addition, Medicare managed care and prescription drug plans may find these data useful for focusing performance improvement efforts to increase quality and reduce costs.

Possible limitations of this study include the issues of differing expectations of and scale use by different racial/ethnic groups, particularly for API respondents.[37] However, recent evidence shows that blacks, whites, and Hispanics similarly interpret objective measures of patient experiences, such as those used in this study.[38] As with all surveys, nonresponse bias may have influenced our findings. Nevertheless, research on CAHPS surveys has found little evidence of nonresponse bias after adjustment for case-mix and nonresponse.[20,39] Finally, although our analysis controlled for a large number of demographic and health characteristics, it could be that some unmeasured confounding variable accounts for the observed associations between race/ethnicity and care coordination. These limitations aside, our study is the first to document racial/ethnic disparities in care coordination experiences in a nationally representative sample. Addressing these disparities is necessary to help ensure high-quality care for all patients.

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