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Associations of CAHPS Composites With Global Ratings of the Doctor Vary by Medicare Beneficiaries' Health Status

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Research Objective: Care coordination among health care providers is essential for high-quality care and it is strongly associated with overall ratings of doctors. Care coordination may be especially important for sicker and chronically ill patients because of the multiple providers involved in their care. This study examines whether the association of care coordination with global ratings of one's personal doctor varies by number of chronic conditions and self-rated health.

Study Design: We used nationally representative Medicare Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey data to evaluate care coordination, doctor communication, getting needed care, getting care quickly, count of 6 chronic conditions (angina, cancer, chronic obstructive pulmonary disease, diabetes, heart attack, stroke), self-rated general health (5-point scale, *poor* to *excellent*, scored linearly), and interactions among them as predictors of the CAHPS global rating of personal doctor (scored 0–100 with 100 being *best possible* personal doctor) using linear regression models. The analytic sample included 242,871 Medicare fee-for-service and managed care beneficiaries in 2013: 56% female; 14% 18–64, 47% 65–74, 27% 75–84, and 11% 85 and older; and 48% high school education or less.

Results: The CAHPS composites (of care coordination, doctor communication, getting needed care, and getting care quickly) and number of chronic conditions were significantly positively associated with ratings of personal doctor ($P < 0.05$). Care coordination and doctor communication had a stronger association with positive ratings of the personal doctor among those with worse self-rated health ($P < 0.001$).

Discussion: Results were consistent with the hypothesis that patients in worse health weigh care coordination more heavily in global physician assessments than patients in better health. Emphasis on improving care coordination, especially for patients in poorer health, may improve patients' overall assessments of their providers. The study provides further evidence for the importance of care coordination experiences in the era of patient-centered care.

Key Words: care coordination, Medicare beneficiaries, patient experience surveys, CAHPS

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Coordination among health care providers is an essential ingredient of high-quality care.[1,2] For example, complete and accurate transmission of health care information among providers is associated with higher rates of preventive screening,[3,4] diabetes monitoring,[4] fewer emergency department visits,[5] and lower hospitalization rates.[6] Optimal care coordination is especially critical for people with chronic conditions and those at high risk for comorbid conditions who often receive care from several providers in multiple settings.[7,8]

Although health plans are charged with coordinating care between interdependent providers and care settings, patients often play this role and, thus, they are a potentially invaluable source of information about care coordination.[9] A patient-reported measure of care coordination (Appendix A, Supplemental Digital Content 1, http://links.lww.com/MLR/B595) on the Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey had a strong unique association with CAHPS global rating of one's personal doctor in Medicare beneficiaries, controlling for other CAHPS multi-item scales (doctor communication, getting care quickly, getting needed care, customer service).[10] But care coordination may be more important for sicker and chronically ill patients because of the multiple providers involved in their care.[11] Indeed, the Centers for Medicare & Medicaid Services (CMS) has separate payments for managing care of beneficiaries with multiple chronic conditions.[11] Whether the association of care coordination with overall ratings of the doctor varies by health status has not yet been shown.

We hypothesized that care coordination would have a stronger association with the global rating of one's personal doctor for sicker patients. Hence, in the current study we evaluate whether the association of care coordination with the global rating of one's personal doctor varies by number of chronic conditions and self-rated health.

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METHODS

Data Collection and Sample

The 2013 CAHPS Medicare surveys were administered to a random sample of 720,287 adult beneficiaries with and without prescription drug coverage. Beneficiaries below 65 years old were eligible for Medicare based on disability. Those in the sample were enrolled for 6 months or longer in Medicare fee-for-service or 1 of 463 Medicare advantage plans in the 50 US states, Washington, DC, or Puerto Rico.

A bilingual (English and Spanish) prenotification letter was followed by a Spanish-language survey for beneficiaries residing in Puerto Rico and beneficiaries who had indicated preference for Spanish-language material. Beneficiaries who indicated a Chinese-language preference and were in a plan that made this translation available received a Chinese-language mail survey. All other sampled beneficiaries received an English-language survey. A second mailing was sent to those not responding to the first mailing. If no mail response was received, telephone follow-up in Spanish (in Puerto Rico and for those who had expressed preference for Spanish), Chinese (for those who had expressed preference for Chinese) or English (all others) ensued, with the option for interviews in any of the 3 languages available throughout the phone follow-up period. Phone follow-up included up to 5 calls.

A 45% response rate was obtaining (319,991 completed the survey): number of completed surveys (including partials) divided by the number of eligible excluding 4825 individuals who were institutionalized (n = 1683), deceased (n = 2941), or otherwise ineligible (n = 201). CAHPS items are only asked of those to whom they apply. Only respondents who indicated that they both have a personal doctor and visited their personal doctor at least once in the last 6 months were included (77% of the sample) and 1% of these cases did not rate their doctor or did not answer any of the care coordination items, leaving a final analytic sample of 242,871.

Survey

The survey included sociodemographic variables (age, sex, race/ethnicity, education, whether lives alone), CAHPS multi-item composites (doctor communication, getting needed care, getting care quickly, and care coordination), 6 chronic conditions [angina or coronary heart disease; cancer other than skin cancer; any kind of diabetes or high blood sugar; heart attack; stroke; and emphysema, asthma, or COPD (chronic obstructive pulmonary disease)], self-rated general health (5-point *poor* to *excellent* scale), self-rated mental health (5-point *poor* to *excellent* scale), and a global rating of one's personal doctor (0–10 response scale with "0" representing worst possible and "10" best possible).

Statistical Analyses

We regressed the CAHPS global rating of the personal doctor on the CAHPS composites (doctor communication, getting needed care, getting care quickly, and care coordination), the chronic condition count, self-rated general health, and 2-way interactions of the CAHPS composites with the chronic conditions count and self-rated general health. Models also controlled for standard CAHPS Medicare survey case-mix adjusters (age, education, self-rated mental health, help from a proxy in responding to the survey, dual eligibility for Medicare and Medicaid, and receiving a low-income subsidy for prescription drug coverage), plus coverage type (fee-for-service or Medicare advantage), and living alone. For significant interaction terms, we calculated average adjusted associations between the CAHPS composite and doctor rating for representative values of health status. Sensitivity analyses examined variants of the model, for example, including only one set of interactions (between composites and general health or between composites and number of chronic conditions) and looking at individual chronic conditions rather than the count. Analytic weights were used to adjust for the probability of selection, propensity to respond, and poststratification to match the Medicare population. Analyses were conducted with SAS 9.4 (SAS Institute Inc., Cary, North Carolina).[12]

Scoring of the care coordination measure is described at the following link (see slides 11-16: www.ma-pdpcahps.org/globalassets/ma-pdp/technical-specifications/clarification_on_scoring_of_composite_measures.pdf). We scored the global rating of personal doctor on a 0–100 scale. We standardized the CAHPS composites to have a mean of 0 and a SD of 1 for the regression models. Chronic conditions were scored as the count of 6 conditions, and self-rated general health was scored −4 (*poor*) to 0 (*excellent*).

RESULTS

The characteristics of the overall-weighted sample and the subset of respondents in the analytic sample appear in Table 1. The majority of the analytic sample was female (56%) and between 65 and 79 years old (62%). The composition of the respondents compared with those who were sampled is summarized in Appendix B (Supplemental Digital Content 2, http://links.lww.com/MLR/B596). Those who completed a survey were less likely to be Medicaid eligible, young, and race/ethnic minorities than those who were survey nonrespondents. However, the analytic weights correct for nonresponse bias.[13]

Table 2 provides the coefficients, SEs, and *P*-values for the regression of the global rating of the doctor on CAHPS composites, self-rated health, chronic conditions count, and interactions between each composite and both self-rated health and chronic conditions count. The R^2 for the model was 52%.

The main effects indicate that more positive reports about doctor communication, getting needed care, getting care quickly, and care coordination were associated with better global ratings of the doctor. In addition, having more chronic conditions was related to more positive global ratings of the doctor. An increase of one chronic condition was associated with an increase of 0.20 in the doctor rating ($P < 0.001$).

A joint test of the significance of the interactions between general health status and each of the CAHPS composites ($df = 4$, $P < 0.001$) indicated that the average adjusted association between doctor rating and ≥ 1 of these composites varied by health status. Both doctor communication and care coordination had a stronger association with ratings of the doctor among those with worse self-rated health ($P < 0.001$). The "Linear Contrasts of Interest" panel showed average adjusted associations between doctor rating and these 2 CAHPS composites for respondents in each self-rated

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TABLE 1. 2013 CAHPS Medicare Advantage and Fee-for-Service Survey Respondents Overall and Analytic Sample

Characteristics	Overall (N = 319,991) [n (weighted %)]	Analytic Sample (N = 242,871) [n (weighted %)]
Age (y)		
18–24	144 (< 1)	84 (< 1)
25–34	1149 (1)	737 (1)
35–44	3278 (2)	2457 (2)
45–54	10,735 (4)	8359 (4)
55–64	24,445 (8)	19,521 (8)
65–69	78,075 (26)	58,056 (25)
70–74	73,920 (21)	56,254 (21)
75–79	55,560 (15)	42,646 (16)
80–84	39,787 (12)	30,326 (12)
85 or older	32,898 (12)	24,431 (11)
Sex		
Male	137,567 (45)	42,755 (44)
Female	182,424 (55)	139,379 (56)
Education		
Eight grade or less	25,202 (7)	18,297 (6)
Some high school	34,062 (9)	25,338 (9)
High school graduate or GED	106,778 (32)	81,094 (32)
Some college or 2-year degree	82,318 (26)	63,332 (27)
4-year college graduate	31,822 (11)	24,181 (11)
> 4-year college degree	39,807 (15)	30,629 (15)
Race/ethnicity (mutually exclusive categories)		
Hispanic	28,314 (7)	21,404 (7)
White	231,586 (74)	179,105 (76)
Black	27,398 (8)	21,257 (9)
Asian/Pacific Islander	10,414 (3)	7811 (3)
American Indian or Alaska Native	1498 (1)	1023 (< 1)
Multiracial	5953 (2)	4596 (2)
Unknown	14,828 (4)	7675 (3)
Language of survey completion		
English	308,825 (98)	234,759 (98)
Spanish	10,401 (2)	7534 (2)
Chinese	765 (< 1)	578 (< 1)
Self-reported chronic conditions		
Heart attack	33,440 (11)	26,926 (11)
Angina/coronary heart disease	48,606 (16)	40,235 (18)
Stroke	24,318 (8)	19,622 (8)
Cancer (excluding skin cancer)	44,504 (15)	35,553 (16)
Emphysema, asthma, or COPD	52,056 (16)	42,938 (18)
Diabetes	94,127 (28)	77,876 (31)
Lives alone	106,495 (32)	79,272 (32)
Insurance		
Fee-for-service	116,255 (77)	89,646 (77)
Medicare advantage	203,736 (23)	153,225 (23)
Survey completion		
Self	282,909 (88)	213,691 (88)
Proxy helped	25,919 (8)	20,505 (8)
Proxy answered questions	11,163 (4)	8675 (4)

Analytic weights adjust for the probability of selection, propensity to respond, and poststratification to match the Medicare population.

CAHPS indicates Consumer Assessment of Healthcare Providers and Systems; COPD, chronic obstructive pulmonary disease.

TABLE 2. Regression of Global Rating of Doctor (0–100) on CAHPS Composites, Self-Rated Health, Chronic Condition Count, and Interactions of CAHPS Composites With Both Chronic Condition Count and Self-Rated Health* (N = 242,871)

	Unstandardized Estimate	SE	*P*
Main effects, Z-scored CAHPS composites			
Doctor communication	8.11	0.16	< 0.0001
Getting needed care	0.23	0.10	0.0202
Getting care quickly	0.41	0.09	< 0.0001
Care coordination	1.79	0.12	< 0.0001
Main effects, health			
Self-rated general health (−4, *poor* to 0, *excellent*)	0.07	0.05	0.1212
No. chronic conditions (count of 6)†	0.20	0.03	< 0.0001
Interactions with self-rated general health (*P*-value, joint test, df = 4)			< 0.001
Doctor communication	−0.36	0.07	< 0.0001
Getting needed care	0.00	0.05	0.9304
Getting care quickly	−0.04	0.05	0.4275
Care coordination	−0.21	0.06	0.0007
Interactions with number of chronic conditions (*P*-value, joint test, df = 4)			0.1076
Doctor communication	−0.08	0.06	0.1605
Getting needed care	−0.04	0.04	0.2855
Getting care quickly	−0.06	0.04	0.1346
Care coordination	0.09	0.05	0.0886
Linear contrasts of interest (simple main effects)			
Doctor communication at *excellent* self-rated general health	8.11	0.16	< 0.0001
Doctor communication at *very good* self-rated general health	8.47	0.11	< 0.0001
Doctor communication at *good* self-rated general health	8.83	0.09	< 0.0001
Doctor communication at *fair* self-rated general health	9.19	0.12	< 0.0001
Doctor communication at *poor* self-rated general health	9.55	0.18	< 0.0001
Care coordination at *excellent* self-rated general health	1.79	0.12	< 0.0001
Care coordination at *very good* self-rated general health	2.00	0.08	< 0.0001
Care coordination at *good* self-rated general health	2.21	0.08	< 0.0001
Care coordination at *fair* self-rated general health	2.42	0.11	< 0.0001
Care coordination at *poor* self-rated general health	2.63	0.16	< 0.0001

The global rating of personal doctor was scored so that 100 is the most positive rating. The CAHPS composites were standardized to have a mean of 0 and SD of 1.

*Model also includes standard CAHPS Medicare case-mix adjusters, coverage type (MA or FFS), and living alone (results not shown).

†Count of 6 chronic conditions: angina, cancer, COPD, diabetes, heart attack, and stroke.

CAHPS indicates Consumer Assessment of Healthcare Providers and Systems; COPD, chronic obstructive pulmonary disease; FFS, fee-for-service; MA, Medicare advantage.

health response category. The simple main effects of communication were 8.11, 8.47, 8.83, 9.19, and 9.55 for *excellent, very good, good, fair, and poor* health, respectively. The simple main effects of care coordination were 1.79. 2.00, 2.21, 2.42, and 2.63 for *excellent, very good, good, fair, and poor* health, respectively. The association between doctor rating and doctor communication was 18% stronger for those in *poor* health than those in *excellent* health, while the association between doctor rating and care coordination was 47% stronger for those in *poor* health than those in *excellent* health.

After adjusting for general health and interactions between general health and the 4 CAHPS composites, none of

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the interactions between number of chronic conditions and the CAHPS composites were statistically significant (joint test: df = 4, $P = 0.11$). A model including only interaction terms between the CAHPS composites and number of chronic conditions had a significant positive interaction term ($P = 0.001$) between care coordination and number of chronic conditions, indicating a stronger relationship between doctor rating and care coordination as number of chronic conditions increased (results not shown). This interaction term was not statistically significant in the main analysis presented in this paper, which also includes interaction terms between the CAHPS composites and general health.

As an additional sensitivity analysis, we fit a model that included separate estimates for the 6 chronic conditions (results not shown). Joint tests of the interaction terms between each of the composites and the 6 chronic conditions were insignificant for doctor communication, getting needed care, and getting care quickly. The joint test of the interaction terms between care coordination and each of the chronic conditions was significant (df = 6, $P = 0.03$). When only interaction terms between care coordination and each of the chronic conditions were kept in the model, the joint test was highly significant ($P < 0.001$), with a significant positive interaction between care coordination and COPD, indicating that beneficiaries with COPD have a stronger association between care coordination and doctor rating than beneficiaries without COPD.

DISCUSSION

This study has limitations. Response rates were not high, and it is unknown whether the same associations would be observed among nonrespondents. We cannot attribute a causal role to the patient experiences measured, given the cross-sectional and observational nature of the design. Thus, interventions based on these data may not improve overall ratings of personal doctors. Nonetheless, the findings of the study provide useful information about the value of care coordination in perceptions of doctors.

The findings of this study support the hypothesis that care coordination has a greater positive association with global rating of the doctor for beneficiaries with worse self-rated health. In addition, better rating of communication with the doctor has a stronger positive association with global rating of the doctor for those with worse self-rated health. Therefore, good care coordination and communication are especially important for less healthy beneficiaries' overall evaluations of their doctors. These results provide support for CMS' decision to establish separate payments for managing care of beneficiaries with multiple chronic conditions.[11]

The differential magnitude of associations of doctor communication, getting needed care, getting care quickly, and care coordination with global rating of the doctor highlights the importance of measuring different domains of patient experience.[14] Care coordination is especially important in determining general perceptions of the doctor, while access to care domains (getting needed care, getting care quickly) are less important for sicker patients in determining perceptions of the doctor. This could be because sicker Medicare beneficiaries tend to have higher levels of utilization than healthy beneficiaries,[15] but their health challenges require better care coordination. The result may be less positive experiences with care for sicker than healthier Medicare beneficiaries,[16] as seen here.

CMS reports the CAHPS Medicare survey data in the *Medicare & You* handbook and on the Medicare Plan Finder website (www.medicare.gov). The CAHPS Medicare care coordination scale was included on Medicare Plan Finder starting in 2012 (2013 Star Ratings). Given the stronger association of care coordination with global ratings of the personal doctor among sicker beneficiaries, care coordination may be especially important for quality improvement targeted at sicker Medicare beneficiaries.

Not enough is known about plan characteristics that facilitate care coordination. Given the increased interest in care coordination for patients in integrated care settings, it should be assessed routinely in future studies. The CAHPS Medicare survey care coordination measure focuses on aspects of coordination that are directly experienced and understood by the patient.[10] It would also be informative to examine how patient reports about coordination relate to other ways of assessing care coordination such as external observer ratings of scheduling, work flow, documentation, and safety.

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