Associations Between Cost-Related Delay in Filling Prescriptions and Health Care Ratings among Medicare Fee-for-Service Recipients

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Abstract

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Patients with lower socioeconomic status frequently report not filling or delaying prescription medications due to cost (hereafter, cost-related prescription delay, CRPD). We hypothesized that CRPD would be associated with lower medical care ratings, but the effect would be confounded by socioeconomic and health factors. In the 2012 CAHPS Medicare Advantage Survey, recipients were asked to rate their medical care while reporting if they had experienced CRPD in the past 6 months. CRPD more than doubled the relative risk (RR) for poor ratings of personal doctor (RR 2.34), specialist (RR 2.14), and overall health care in the past 6 months (RR 2.40). Adjusting for sociodemographic and health status slightly reduced the RR to 1.9, but adjusting for low income subsidy and lack insurance for medications did not. Our results show that CRPD is independently associated with poor ratings of medical care irrespective of health, financial, or insurance status. Providers might improve patient ratings and thus satisfaction by explicitly discussing prescription cost and mutually forming affordable treatment plans.

Background:

The United States spent approximately $325 billion on retail drugs in 2015, roughly $1000 per person. Since then, medication costs have continued to rise exponentially[1]. Even with health insurance, patients bear much of these costs out of pocket and may experience practical financial consequences from medication expenditures. As a result, patients may choose not to purchase, or to delay purchasing prescription medications, a phenomenon known as "cost-related prescription delay" (CRPD). This is also referred to as "cost-related nonadherence" or "cost-related non-collection".

Older adults more often have limited and fixed income and are burdened with more health care costs and prescription medications then younger adults. Research has found that CRPD is common in older adults: 26% of a general Medicare sample, 12% of a Veteran's Affairs population, and 25% of privately-insured older adults[2–6]. Several predictors of CRPD have been identified including low income, unsafe neighborhoods, female sex, multiple chronic conditions, functional limitations, poor mental and physical health, and lack of prescription drug coverage[2,6–9]. CRPD frequently co-occurs with other financial stressors, such as food insecurity[10,11]. The Medicare low-income subsidy has been found to diminish, but not eliminate CRPD[12]. Furthermore, CRPD has been associated with declines in self-rated health among younger but not older adults[13]. From the current literature, it is unclear if CRPD represents an independent risk factor, a marker of general health or financial status, or a sign of ineffective (and thus not cost-effective) medication treatment.

Qualitative research has found that providers often fail to discuss medication-related costs despite patient interest in doing so, and that a trusting relationship with the provider may reduce CRPD[14–17]. The presence of CRPD may thus signify the provider's failure to deliver patient-centered care. One way to determine how well medical care matches patients' interests is by quality rating. Although patient ratings can be difficult to interpret and may not be the ultimate goal of medical care or public health, they are an important predictor for patient satisfaction and quality improvement. It remains unknown how CRPD influences patient ratings of health care.

We sought to ascertain if CRPD was associated with patient's rating of medical care in a large Medicare sample. We hypothesized that individuals with CRPD would be significantly more likely to give poor ratings to medical care than those who did not report it. We anticipated that sociodemographic, economic and health-related factors, rather than CRPD alone, would account for this effect. Specifically, we hypothesized that low income, lack of insurance, and self-reported poor health status would confound the relationship between CRPD and low ratings.

Methods:

We analyzed data from Cohort 13 of the Consumer Assessments of Healthcare Providers and Systems (CAHPS®) Survey[18]. This survey assesses experiences with health care, both generally and specifically related to access and communication. Every year since 1997, each of the Medicare Advantage (MA) programs has surveyed 800 respondents who are selected at random. Respondents are enrollees of MA private health insurance program. About 30% of all Medicare beneficiaries have been enrolled in an MA program[19]. In 2012, the 12-page core survey was mailed, and there was a follow-up reminder call to those who did not return it. Spanish-language

surveys were sent to those who returned a postcard indicating this preference. About 14% of respondents were under age 65 but were eligible for coverage due to disability status. They were included in the analyses.

The characteristics of the sample are shown in Table 1. Self-rated health was assessed with a single question: “In general, how would you rate your overall health?” We dichotomized the answer as healthy (excellent, very good, or good health) or sick (fair or poor health). Comorbidities were self-reported and measured by asking the participant if a doctor had ever told them they had one or more of the following six conditions: (1) heart attack; (2) angina or coronary artery disease; (3) stroke; (4) cancer other than skin cancer; (5) emphysema, asthma, or COPD; and (6) any kind of diabetes or high blood sugar. This variable was categorized as none, one, two, or three or more. Insurance coverage for medications was determined by the question, “Do you have insurance that pays part or all of the cost of your prescription medicines?” Income status was assessed by an administrative (not self-report) variable for low-income subsidy, defined for individuals who received Supplemental Security Income (SSI)[12].

The main outcome was rating of personal doctor, specialist, and health plan. The question about personal doctor asked, “Using any number from 0 to 10, where 0 is the worst personal doctor possible and 10 is the best personal doctor possible, what number would you use to rate your personal doctor?” Corresponding questions were asked about rating specialist provider and overall health care in the past 6 months. We defined any score of 5 or less as being an indication of a poor rating. The main predictor was CRPD, as measured by the question, “In the last 6 months, did you delay or not fill a prescription because you felt you could not afford it?” The

options were “yes”, “no”, or “My doctor did not prescribe any medicines for me in the last 6 months”. Only respondents who answered “yes” or “no” were included in the analysis.

The prevalence of CRPD and low ratings across the three domains was tabulated based on the participant characteristics. Because the predictors of CRPD have been well-reported elsewhere, we did not conduct statistical tests for these comparisons. The association between CPRD and low ratings was quantified using logistical regression models. Four models were developed: (1) unadjusted; (2) adjusted for demographic (age, sex, race, and education) and health (self-rated health and comorbidities) variables; (3) adjusted for demographic and health variables, as well as low-income subsidy; and (4) adjusted for demographic and health variables, low-income subsidy, and lack of insurance coverage for medications. To simplify interpretation, odds rations were converted to relative risks[20]. Because of the multiple comparisons, only p-values < 0.01 were considered to indicate a significant association. In order to allow comparison of coefficients, we computed unadjusted and adjusted relative risks for three other predictors: three or more comorbidities, low income subsidy, and lack of insurance for medications.

Results:

Of the 274,996 eligible CAHPS participants, 101,910 (36.8%) returned a survey that had responses to all the items we analyzed. The average age was 72.8 years. Approximately 55% of the respondents were women, 13% reported a non-white race, and 52.5% described at least some college education.

The rates of CRPD and low rating of health care are seen in Table 2. Of the entire group, 13.3% reported CRPD, 4.1% gave a poor rating to personal MD, 5.1% gave a poor rating to specialist, and 8.3% gave a poor rating to overall health care. CRPD was considerable more common among younger than older participants; among Black, Hispanic, Native American, and Native Hawaiian participants than among White and Asian participants; among those with less education; among those who reported fair or poor self-rated health; among those with two or more comorbidities; among those without insurance coverage for medications; and among those who had received a low-income subsidy. Low ratings of personal doctor, specialist, and overall health care followed the same trends, but with less pronounced marginal differences than for CPRD.

Table 3 shows the results of regression analyses, with coefficients representing the relative risk for low ratings in those who reported CRPD compared to those who did not. In unadjusted analyses, CRPD more than doubled the relative risk for a poor rating of personal doctor (RR 2.34), specialist (RR 2.14), and overall health care in the past 6 months (RR 2.40). Adjusting for sociodemographic and health variables slightly lowered the RR to 1.9 (for all three) but adjusting for low income subsidy and lack of insurance coverage for medications did not further lower the relative risk.

The relative risk of CRPD for the three other predictors (three or more comorbidities, low income subsidy, and lack of insurance for medications) with the following regression models: (a) unadjusted; (b) adjusted for demographics (age, sex, race, and education) and health variables (self-rated health and comorbidities); and (c) adjusted for demographic and health variables, low-

income subsidy, and lack of insurance coverage for medications. The RRs for having three or more comorbidities were: (a) 1.73, (b) 1.28, and (c) 1.30. The RRs for low income subsidy were (a) 1.65, (b) 1.17, and (c) 1.16. Finally, the RRs for lack of insurance that covers medications were (a) 1.85, (b)1.80, and (c) 1.83. All p-values were less than 0.001.

Discussion:

We hypothesized that a delay in filling prescriptions because of cost would be associated with lower ratings of health care, but that health-related factors (more comorbidities, worse health) and economic factors (low income, lack of insurance that pays for medications) would strongly influence the findings. Contrary to our hypothesis, even after adjusting for demographic, health-related, insurance-related and income-related variables, CRPD about doubled the risk of low ratings of the personal doctor, specialist, and health care in general. In adjusted models, the effect of CRPD on ratings was larger than the effects of health status, low income, and insurance for medications. Our results suggest that CRPD may be an important determinant of patient satisfaction with care.

Although the survey did not specify reasons why participants gave the ratings they did, it is likely that the inability to afford prescriptions would have several consequences. First, paying for expensive medications might create real financial strain for many older adults who balance cost of living and medical expenses with limited pensions or income, making the entire experience with healthcare unpleasant. This frustration would be similar to that felt by people who are "stuck" with car payments or house payments beyond their means. Second, the provider's choice to prescribe expensive (at least relative to the patient's income sources) medications might

indicate a certain disregard for the patient's welfare. The provider might seem not to care if the medications are unaffordable. This is akin to a salesperson pushing expensive items on a customer who cannot afford them. Third, patients may conclude that they are not receiving sufficient benefit given the expenses of their medications and thus being "ripped off" by their medical treatments. This sentiment is sometimes expressed towards subscription services in which consumers seem to have little choice, such as cable television. Our finding that dissatisfaction with overall health care was greater than that with providers (either personal doctor or specialist) suggests that patients may focus their frustration on the system, rather than the individual providers. Additional research is needed to determine which of these experiences patients identify with when rating health care.

Previous studies have associated CRPD with a variety of person-level factors, and have inferred that CPRD could be reduced by making prescription drugs more affordable and accessible. However, recent literature has concluded that CRPD is a more complicated phenomenon, not simply that people with socioeconomic disadvantages cannot "afford" their medications. For example, people with negative medication beliefs and more depressive symptoms are more likely to selectively cut back on medications due to cost[3]. The patient's sense of control might influence their experience: when patients ask their physicians for lower cost medications, they have a lower likelihood of CRPD[21]. Many patients would like to discuss medication costs with their providers yet do not do so, and this has been associated with worse disease control and quality of life[15]. Other recent research indicates that patients who have trusting relationship with their provider and shared decision making regarding their prescriptions also have lower rates of CRPD and more satisfaction with care[3,15]. Among patients who had higher out of pocket costs,

low income was only associated with cost-related adherence problems in the context of low physician trust[16].

In light of this other research on CRPD, our findings suggest that strategies that effectively reduce CRPD would likely increase patient ratings of care. This does not imply that patients should dedicate more of their disposable income to medications. Instead, providers might discuss the patient's goals for medication treatment and the real costs with anticipated benefits of various drug interventions. Given the potential dangers of polypharmacy in older adults[22,23], providers might save patients money while minimizing harm by systematically taking away medications, in a process of deprescribing[24]. Shared decision-making frameworks, which elicit and address patient values and preferences, may provide a mechanism to address financial consequences of treatments. However, additional research is needed around what "affordable" means to different patients, how to weigh the costs, benefits and risks of treatments, and how to ensure that sufficient discussions about costs occur in clinical settings.

It is likely that addressing economic concerns, rather than just medical issues, in clinical settings would yield major benefits, but the system of care is poorly suited to support this process. Providers generally express interest in understanding patients' financial burden and incorporating this information into chronic care, yet do not have many opportunities to do so[14]. Providers face pressure to follow practice guidelines for managing chronic conditions, but these guidelines generally fail to consider the patients' economic interests or goals. Insofar as guidelines typically encourage adding rather than removing medications[25], following them without attention to the

patients' experiences and wishes might generate worse ratings of the providers and of overall health care.

There are a few important limitations to our study. First, our sample was unique in that only one in eight respondents reported CRPD. This is lower than other studies characterizing CRPD[2–6]. This could be explained by the fact that our sample included predominantly older population with Medicare, who may have more stable income and access to Medicare Part D to reduce the financial burden of medication cost. Medicare Advantage enrollees have higher income than the general population of older adults[19]. Second, this population may face a different set of financial and health issues than younger adults, and so the results may not apply generally. Third, the survey included only a single question about prescription drugs and does not ask about the total number or type of medications participants were prescribed. It could be that as the number of medications increases that CRPD also increases, or that certain classes of medication are predictive of CPRD and ratings of health care. Fourth, the means to quantify income and insurance status were rough and may not account for the relationships between financial stress, prescription medication use, and satisfaction. Finally, the response rate to the survey was low, which limits generalizability. Although, other research on CAPHS has not found response bias to significantly skew results[26].

Conclusions:

CRPD doubled the likelihood of poor ratings of providers and health care, and remained a significant predictor after adjusting for economic and health-related factors. It may be a critical factor in patient dissatisfaction. CRPD may signify patient frustration with healthcare, provider

insensitivity to the patient's entire life situation, or provision of treatment that is not cost-effective from the patient's perspective. Our results support other published research that providers who discuss economic factors receive higher ratings from patients. Practice guidelines, which encourage adding medications and generally ignore patient preferences, may contribute to CRPD and thus diminish patient satisfaction. Discussing medication affordability and goals of care might be a straightforward way to improve outcomes and patient experience of health care for those who are financially stressed.

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Table 1: Characteristics of the All Participants

	Characteristic	%
Gender	Men	44.6%
	Women	55.4%
Age	$50 \leq Age \geq 65$	10.4%
	$66 \leq Age \geq 80$	64.5%
	$Age \geq 81$	24.1%
Race	Black	8.1%
	Hispanic	5.5%
	Native American	2.1%
	Native Hawaiian	0.4%
	White	89.3%
	Asian	2.4%
Education	Less than High School	14.9%
	High School Graduate or GED	59.1%
	4-yr College Graduate or more	26.0%
Self-Rated Health	Self-rated health excellent, very good, or good	70.6%
	Self-rated health fair or poor	29.4%
Comorbidities (out of 6)	0	48.3%
	1	30.3%
	2	13.5%
	3 or more	8.0%
Insurance that pays for prescriptions	Yes	85.4%
	No	14.6%
Income	Did Not Receive Income Subsidy	15.6%
	Received Income Subsidy	84.4%

Table 2: Prevalence of CRPD and Low Ratings of Medical Care Based on Participant Characteristics.

	Demographic	% Reporting Cost Related Rx Delay	% Rated Personal Doctor Poorly	% Rated Specialist Doctor Poorly	% Rated Medical Care Poorly
Entire Group		13.3%	4.1%	5.1%	8.3%
Gender	Men	11.7%	3.8%	4.7%	8.4%
	Women	14.7%	4.3%	5.6%	8.3%
Age	$50 \leq \text{Age} \geq 65$	32.4%	7.3%	9.0%	15.5%
	$66 \leq \text{Age} \geq 80$	12%	3.4%	4.4%	7.2%
	$\text{Age} \geq 81$	7.2%	4.0%	5.2%	7.6%
Race	Black	20.1%	6.0%	9.8%	14.5%
	Hispanic	20.6%	5.7%	7.7%	13.7%
	Native American	23.3%	6.7%	9.9%	14.5%
	Native Hawaiian	19.3%	4.6%	8.1%	10.1%
	White	12.6%	3.8%	4.8%	7.5%
	Asian	9.5%	3.9%	7.7%	11.8%
Education	Less than high school	18.3%	5.8%	8.2%	13.3%
	High School Graduate or GED	14.3%	4.9%	5.3%	8.5%
	4-yr College Graduate	8.4%	2.8%	3.9%	5.0%
Self-Rated Health	Excellent, very good, or good	9.1%	3.0%	4.0%	6.1%
	Fair or Poor	22.1%	6.4%	7.7%	13.6%
Comorbidities	0	9.1%	3.6%	5.1%	7.6%
	1	13.7%	3.8%	4.6%	7.7%
	2	17.5%	4.2%	4.7%	8.3%
	3 or more	21.3%	4.9%	5.2%	9.5%
Insurance Pays for Medications	Yes	11.7%	3.7%	4.7%	7.2%
	No	22.4%	6.0%	8.0%	13.3%
Income	Did Not Receive Income Subsidy	12.3%	3.7%	4.7%	7.5%
	Received Income Subsidy	20.9%	7.4%	10.7%	15.6%

Table 3: Relative Risk for Poor Ratings of Medical Care for Those Who Reported CRPD vs Those Who Did Not

	Regression Models			
Poor Ratings of…	(1)*	(2)*	(3)*	(4)*
	Unadjusted RR	Adjusted for Demographic & Health Variables**	Adjusted for (2) & Low-Income Subsidy	Adjusted for (3) & Insurance for Medications
Personal Doctor	2.34 (2.18-2.52)	1.93 (1.76-2.12)	1.95 (1.78-2.14)	1.93 (1.75-2.13)
Specialist	2.14 (2.03-2.36)	1.92 (1.73-2.12)	1.93 (1.75-2.15)	1.91 (1.72-2.11)
Medical Care	2.40 (2.29-2.53)	1.97 (1.84-2.10)	2.00 (1.87-2.13)	1.95 (1.83-2.10)

*All p-values are < 0.001
** Adjusted for demographic (age, sex, race, education) & health (self-rated health and comorbidities) variables.

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