Racial and Ethnic Inequities in Managing Prescription Drug Costs Among Older Adults in Medicare

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Abstract

Access to prescription drugs is a critical issue for adults 65 and older, almost 90% of whom take at least one medication to manage their health. About one in four Medicare beneficiaries has difficulty affording prescription drugs, resulting in delayed and unfilled prescriptions, and the cost burden is higher among non-Hispanic Black and Latino/a adults. We used nationally representative data to evaluate how differences in socioeconomic resources, access to care, health care need, and the use of cost-saving strategies contributed to long-standing racial and ethnic inequalities in prescription cost burden among older Medicare beneficiaries. We used logistic regressions and the Karlson-Holm-Breen decomposition method to quantify the degrees to which each factor accounted for the heightened cost burden among non-Hispanic Black and Latino/a beneficiaries compared to non-Hispanic White beneficiaries. Non-Hispanic White beneficiaries had lower odds of cost burden and higher odds of engaging in cost-saving strategies compared to marginalized groups. Even after controlling for socioeconomic, insurance, and health characteristics, non-Hispanic Black beneficiaries were more likely to experience prescription drug cost burden, and Hispanic or Latino/a beneficiaries were less likely to use cost-saving strategies compared to non-Hispanic White beneficiaries. Socioeconomic inequalities accounted for a large share of the greater cost burden experienced by older non-Hispanic Black and Hispanic/Latino adults. Notably, Hispanic/Latino beneficiaries' lower use of cost-saving strategies was a significant driver of their greater cost burden. Our study highlights how Medicare, a near-universal insurance system for older Americans, still reproduces systemic inequities and threatens the health and financial well-being of many.

Keywords Barriers to care · Medicare · Medication access · Insurance · Equity

Introduction

Prescription drugs are an essential component of health care for managing health conditions and avoiding more serious and costly complications. Unaffordable prescription drug costs contribute to health and financial harms, including delayed or unfilled prescriptions, medical debt, and trade-offs between spending on medications or other necessities. Older adults ages 65 and above use more prescription drugs than their younger counterparts and face a greater associated financial burden [1, 2]. Cost-related barriers to accessing prescription drugs disproportionately affect vulnerable populations including older adults and marginalized groups, exacerbating racial and ethnic health disparities [1, 3, 4].

Medicare, which provides near-universal health insurance coverage for adults aged 65 and older with age-based eligibility, is the largest payer for prescription drugs for older US adults. This is primarily through the pharmacy benefit, Part D, which covers outpatient prescription drugs. Prescription drug coverage is not mandatory within the Medicare program, and coverage incurs additional costs [5]. Part D covered prescription drugs for over 51 million enrollees (78% of Medicare beneficiaries) in 2023 and total Part D expenditures were over $117 billion in 2022 [6]. Even with insurance coverage, beneficiaries face out-of-pocket costs for prescription drugs, a form of cost sharing that has been promoted to "encourage patients to become smarter consumers" and control total health care spending [7]. Medicare beneficiaries incur high costs and face some of the most difficult cost sharing requirements for prescription drugs

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compared to other forms of insurance coverage [8]. In 2022, Part D enrollees paid $18.5 billion in cost sharing, in addition to $25.3 billion in premiums [6]. The growth in drug costs paid by Part D enrollees can be attributed to a few key trends: prescription drug prices have more than doubled on average from 2006 to 2022, Part D plans increasingly use coinsurance (charging beneficiaries a percentage of list price ranging from around 20 to 35%) for branded drugs, and the out-of-pocket spending threshold in Part D has increased annually [6, 8, 9]. Beneficiaries may experience prescription drug cost burdens differently due to varying financial priorities, healthcare needs, and socioeconomic contexts, highlighting the importance of self-report to understand the impacts of drug costs. About 25% of Part D enrollees reported having a prescription drug affordability issue, and 15% reported cost-related medication nonadherence (defined as delaying or not filling their prescription because of cost) [6, 11]. In a recent survey of all Medicare beneficiaries, the rate of cost-related nonadherence was higher, about 20% [10].

Prescription drug affordability among Medicare beneficiaries is an important issue for health equity. Previous research has highlighted the existence of racial and ethnic differences in prescription drug cost burden and the use of cost-saving strategies [11]. Patients from marginalized racial and ethnic groups are less likely to discuss out-of-pocket costs with healthcare providers [12–15]. This is important as many cost conversations involve cost-saving strategies such as switching from brand name to generic drugs or receiving free samples [16]. However, it is still unknown to what extent lower use of cost-saving strategies by marginalized racial and ethnic groups contributes to their greater prescription drug cost burden, especially when considering the contribution of other relevant factors including socioeconomic, insurance, and health statuses. Our study contributes to the literature on prescription drug affordability and equity by systematically and simultaneously examining several factors that mediate racial and ethnic disparities in prescription drug cost burden among older adults. Our findings quantify the extent to which social, economic, and health differences contribute to unequal cost burden of prescription drugs. We draw attention to an area of persistent inequity in access to care within a population entitled to federal health insurance, and the limitations of individual-level strategies to effectively reduce prescription drug cost burden.

Conceptual Framework

We referred to the Andersen Behavioral Model of Health Services Use which was initially developed in the 1960s to reflect individual health services use as a function of predisposition for service use, enabling or impeding factors, and need for care [17]. This conceptual framework is relevant to our study because prescription drug use, a type of health services use, is directly linked to the outcome, reported experience of prescription drug cost burden as indicated by a set of survey questions about cost-related medication nonadherence and reduced spending in other areas to afford prescription drugs. The Andersen model informed our study of relationships between race and ethnicity, prescription drug cost burden, use of cost-saving strategies, and helped identify other potential mediating or confounding factors.

Figure 1 depicts our conceptual model and highlights the focal relationship, that marginalized race and ethnicity is associated with greater prescription drug cost burden (a positive association increasing the likelihood of experiencing cost burden). In fact, non-Hispanic Black and Hispanic/Latino Medicare beneficiaries ages 65 and above reported difficulty affording prescription drugs at rates roughly 1.5 to 2 times higher than non-Hispanic White adults [18]. Engagement in cost-saving strategies is a mediator of interest in the relationship between marginalized race and ethnicity and cost burden. Marginalized race and ethnicity are negatively associated with the use of cost-saving strategies [11], and the cost conversations with providers that may facilitate their use [12–16]. Cost-saving strategies theoretically reduce prescription drug cost burden by obtaining drugs with lower or no out-of-pocket costs. We also acknowledge the bidirectional relationship and potential reverse causality, where experiencing greater prescription drug cost burden can lead to increased use of cost-saving strategies out of necessity.

We categorize other relevant factors associated with marginalized race and ethnicity and prescription drug cost burden into three categories following the Andersen model. Firstly, age and gender are included as predisposing demographic factors that influence cost burden. Older age and female gender are associated with greater prescription drug cost burden [1, 2, 18]. Secondly, key enabling factors associated with lower prescription drug cost burden include higher income, education, and health insurance literacy [18–20]. Due to systemic inequality and racism, marginalized racial and ethnic groups have lower income and education [21]. Additionally, prescription drug insurance coverage and supplemental benefits reduce prescription drug cost burden and there are systematic differences in coverage status by race and ethnicity [22, 23]. Overall healthcare access, which is lower for marginalized groups [24, 25], is likely correlated with the quantity and cost of prescriptions. Thirdly, poorer health status is associated with greater prescription drug cost burden among Medicare beneficiaries [18]. Beneficiaries from marginalized racial and ethnic groups face a higher chronic disease burden, especially for common conditions like hypertension and diabetes, and are more likely to report being in poor health [26].
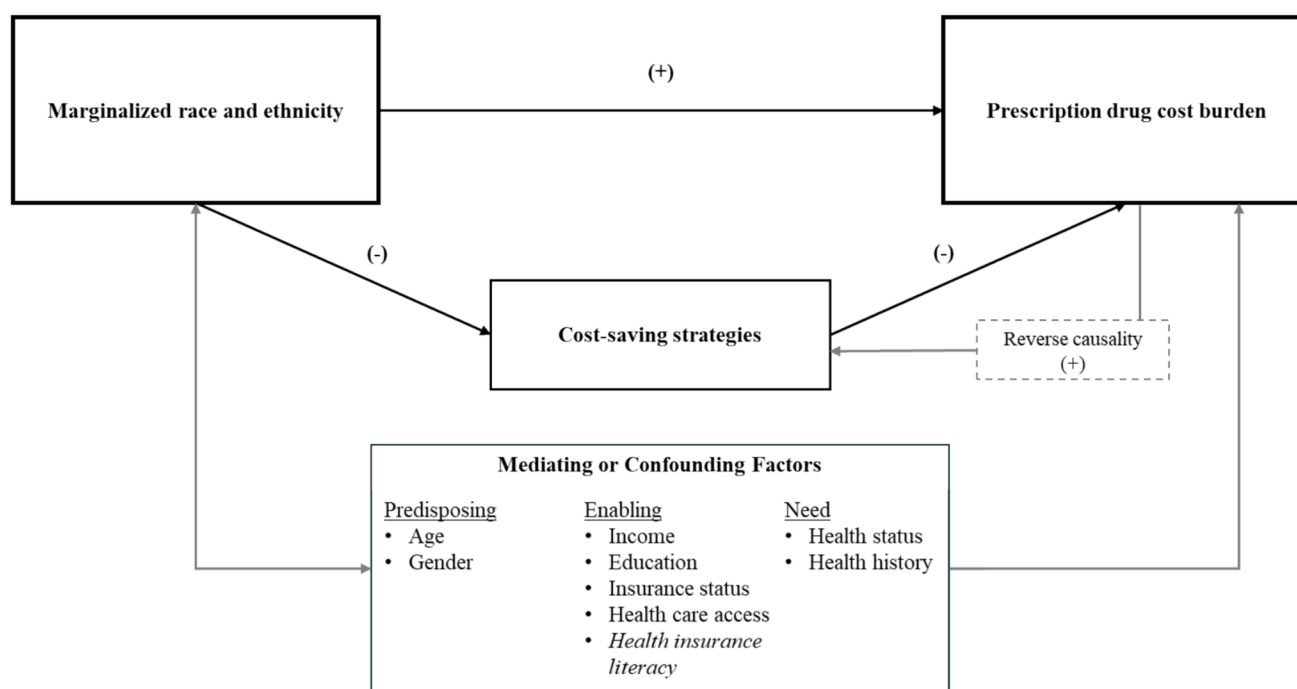
Fig. 1 Conceptual framework of focal relationship between marginalized race/ethnicity and prescription drug cost burden mediated by use of cost-saving strategies. Italics indicate unmeasured variables not included in our estimation models. Framework based on the Andersen Behavioral Model of Health Services Use [17]

Methods

This study used the public-use Medicare current beneficiaries survey (MCBS PUF), a nationally representative sample of the non-institutionalized Medicare population. We pooled 4 years of data from 2017 to 2020 and used questions administered in the MCBS fall and summer segment surveys. We used cross-sectional weights that allow for nationally representative analyses. The MCBS PUFs are limited versions of the MCBS survey data released to the public after disclosure protections are applied to mask sensitive and potentially identifying variables. As noted below, several variables in our analysis are combined into coarse categories in the PUF.

We focused our study on Medicare beneficiaries aged 65 and above. Medicare eligibility for those under 65 is linked to qualifying medical conditions or disabilities [27], and these younger beneficiaries have profiles that diverge from the older Medicare population. We started with 33,002 respondents who were administered questions on prescription drug use and affordability. We dropped 5542 respondents under age 65. We dropped an additional 200 observations that had missing values. In summary, our analysis sample included 27,260 respondents aged 65 and older who answered MCBS survey questions on prescription drugs in 2017 to 2020.

Cost Burden of Prescription Drugs

The first set of outcomes describes the reported experience of prescription drug cost burden. In a series of questions, MCBS asked how often, in the last year, the respondents (1) took smaller doses than prescribed of a medicine to make the medicine last longer, (2) skipped doses to make the medicine last longer, (3) delayed getting a prescription filled because it cost too much, (4) decided not to fill a prescription because it cost too much, and (5) spent less money on food, heat, or other basic needs to have money for their prescription drugs [28]. Respondents could choose to answer often, sometimes, and never. We combined responses, often and sometimes, to create binary variables that indicated whether the respondent experienced a cost burden associated with their prescription drug utilization. We also created a sixth binary variable that indicates whether the respondent experienced any of the five cost burdens.

Prescription Drug Cost-Saving Strategies

The second set of outcomes comprised self-reported use of four cost-saving strategies to lower out-of-pocket costs for prescription drugs. The questions asked how often, in the last year, the respondent (1) asked for the generic version instead of brand name prescription drug(s), (2) asked for or received prescription drug samples from a doctor or

health professional, (3) compared prices or shopped around for the best price of prescription drug(s), and (4) purchased discounted prescription drugs without using any drug insurance to reduce spending on drugs [28]. Similarly, to the first set of outcome variables on financial burden, we combined two responses, often and sometimes, to create binary variables to indicate that the respondent engaged in cost-saving strategies. We also created a fifth binary variable that indicates whether they employed any of the four cost-saving strategies.

Demographic Characteristics

Our primary variable of interest was the respondents' race or ethnicity, which is based on self-report in the MCBS [29]. While MCBS asked detailed race and ethnicity questions, the public use file combined them into a single variable that categorized respondents into non-Hispanic White, non-Hispanic Black, and Hispanic or Latino/a. A fourth category combined all Asian groups, Native Hawaiians, Pacific Islanders, American Indian, Alaskan Natives, and anybody who indicated more than one race or ethnic group. Similarly, MCBS PUF categorized age into large groups: 65–75 and over 75. Gender is measured by administratively reported sex with categories of male and female. Age and gender are included to account for confounding predisposing factors associated with prescription drug cost burden.

Socioeconomic Status, Insurance Factors, and Access to Care

Socioeconomic status, insurance, and access to care variables are relevant enabling factors that potentially influence prescription drug cost burden. Our models included marital status (married or not married), income to federal poverty level (FPL) ratio categorized into four groups, and educational attainment as measures of socioeconomic status. MCBS PUF coarsened educational attainment into three groups: less than high school; high school or vocational, technical, business training; and more than high school. In addition to socioeconomic variables, we included four variables for insurance statuses. Our models included a variable for dual Medicare-Medicaid enrollment (dually eligible). Dually eligible beneficiaries significantly differ in healthcare access and prescription drug costs compared to those with Medicare alone [30, 31]. Dually eligible beneficiaries do not pay deductibles or premiums in Part D; however, they can have burdensome copayments, especially given the relatively lower income and asset levels among dually eligible beneficiaries [23]. Several prescription drug coverage options and supplemental benefits are available to Medicare beneficiaries that can directly impact out-of-pocket costs for prescription drugs. We included an indicator variable for enrollment in any Medicare insurance plan with drug coverage during the year, which includes traditional Medicare with standalone Part D plan, Medicare advantage plans with Part D prescription drug coverage, and retiree drug subsidy plans. We also included an indicator variable for enrollment in a private insurance plan with drug coverage, which includes employer-sponsored or other private plans that may be in addition to or instead of Medicare Part D coverage. Lastly, we included a variable for enrollment in the Medicare Part D low-income subsidy (LIS), also called the "Extra Help" program, which dramatically reduces the out-of-pocket costs of prescription drugs in Part D [32]. The variable included for access to care indicated whether the respondent had trouble getting needed health care in the past year.

Healthcare Needs

We included health status and health history variables to account for differences in need for prescription drugs. The first variable dichotomized the five-scale self-rated general health compared to others of the same age to identify respondents who responded fair or poor. This is a well-validated measure of health status, including in diverse demographic groups [33, 34]. Next, indicator variables for a reported history of 11 prevalent chronic conditions were included. Conditions were included based on high prevalence in the Medicare population, and these prevalence statistics, as well as additional details about specific condition categories, are included in Supplemental Table 1 in the Online Resource.

Analytical Approach

Our core analysis builds upon two logistic regression models that examined the relationships between race and ethnicity and the odds of experiencing a prescription drug cost burden (at least one of the five) and engaging in a prescription drug cost-saving strategy (at least one of the four). Both models include demographic characteristics, socioeconomic and insurance statuses, healthcare access, and healthcare need variables. The model that examined the odds of experiencing at least one prescription drug cost burden included engaging in a prescription drug cost-saving strategy as a covariate based on the conceptual framework. Sensitivity analysis assessed the impact of excluding this covariate (Supplementary Table 2). Logistic regression models that examined the odds of specific cost burdens or cost-saving strategies are presented in Supplementary Tables 3 and 4 in the Online Resource. To quantify the degrees to which demographics, socioeconomic and insurance statuses, access to care, and healthcare need contributed to racial and ethnic disparities in prescription cost burden, we used the Karlson-Holm-Breen (KHB) decomposition method [35]. This approach is

Table 1 Descriptive characteristics of the analytical sample from the Medicare Current beneficiaries survey public use file (MCBS PUF) by racial and ethnic group, 2017–2020[a]

		Total $N=26,909$	Non-Hispanic White $N=20,726$	Non-Hispanic Black $N=2147$	Hispanic or Latino/a $N=2604$	Remaining groups[c] $N=1432$	p-value[d]
Weighted, N (%)		258,082,556	200,091,406 (77.5)	21,885,401 (8.5)	19,743,316 (7.7)	16,362,434 (6.3)	
Demographic characteristics							
Age group[b]							
	65–74	59.44	58.58	62.32	61.93	62.96	***
	75 and over	40.56	41.42	37.68	38.07	37.04	
Female[b]		55.52	55.14	58.56	59.30	51.61	**
Socioeconomic status, insurance, and access							
Married		56.05	58.62	35.99	49.01	60.18	***
Educational attainment[b]							
	Less than high school	12.60	7.31	27.14	47.76	14.53	***
	High school or vocational, technical, etc	29.88	30.66	0.00	21.52	25.06	
	More than high school	57.52	62.03	72.86	30.72	60.41	
Income poverty ratio[b]							
	≤100% FPL	11.36	6.30	28.43	36.82	18.65	***
	100–135% of FPL	7.59	6.20	14.44	12.98	8.77	
	135–200% of FPL	14.25	13.98	16.97	13.62	14.73	
	>200% of FPL	66.80	73.52	40.17	36.58	57.85	
Medicare-Medicaid dual eligible		11.33	5.83	30.35	38.78	19.07	***
Enrolled in LIS		13.79	7.28	38.11	43.87	23.39	***
Enrolled in Medicare drug coverage[e]		78.80	77.94	82.24	85.71	76.27	***
Private plan with drug coverage		31.30	32.79	27.05	21.10	29.63	***
Trouble getting needed health care		5.84	5.54	6.13	7.54	7.10	*
Health							
Fair or poor health compared to others of same age[f]		15.33	12.43	25.45	29.94	19.16	***
Chronic conditions							
	Alzheimer's disease/dementia	3.20	2.86	3.78	5.34	3.89	***
	Arthritis	31.21	30.11	36.67	35.97	31.48	***
	Cancer	36.96	41.71	17.11	20.02	26.73	***
	CVD	63.50	62.48	64.91	71.16	66.92	***
	Depression	20.63	0.00	15.89	25.62	17.89	***
	Diabetes	31.84	27.83	45.12	47.04	44.05	***
	Emphysema/asthma/COPD	17.16	17.09	18.67	15.19	18.30	
	Eye condition	65.26	66.42	60.93	60.39	62.98	***
	High cholesterol	64.38	63.68	67.01	70.34	62.20	***
	Hypertension	63.47	60.96	80.77	68.39	64.82	***
	Osteoporosis	17.41	17.88	11.27	21.09	15.45	***

Sample is limited to beneficiaries aged 65 and older who participated in the MCBS Summer survey. Data source: MCBS PUF 2017–2020

Rx prescription drug(s), *FPL* federal poverty level, *LIS* low-income subsidy program, *CVD* cardiovascular disease, *COPD* chronic obstructive pulmonary disease

[a]Values are weighted using pooled MCBS Summer segment cross-sectional weights

[b]MCBS PUF coarsens values to reduce risk of reidentification

[c]Group includes Asian, Native Hawaiian or Pacific Islander, American Indian or Alaska Native, and those who are in more than one category

[d]Tests of significance use Pearson's chi-squared test

[*]$p<0.05$; [**]$p<0.01$; [***]$p<0.005$

[e]Includes drug coverage through Medicare advantage, Part D, and retiree drug subsidy

Table 1 (continued)

[f]Recoded to binary outcome from a 5-point Likert scale ranging from excellent to poor

Table 2 Unadjusted differences in burden of prescription drug costs and use of cost-saving strategies by major race and ethnicity groups among Medicare beneficiaries 65 and older, 2017–2020 (%)

	Total	Non-Hispanic White	Non-Hispanic Black	Hispanic or Latino/a	Remaining groups[a]	p-value[b]
Experienced Rx cost burden in past year						
Took smaller dose of Rx	4.22	3.99	5.68	3.93	5.34	*
Skipped doses to make Rx last	3.30	2.91	5.40	3.98	4.36	***
Delayed filling Rx because of cost	4.98	4.44	8.17	5.73	6.50	***
Did not fill Rx because of cost	7.90	7.42	11.18	8.39	8.84	***
Spent less to save for Rx	3.92	2.98	8.40	5.41	7.58	***
Any cost burden from Rx	**13.68**	12.52	19.60	15.28	18.07	***
Engaged in Rx cost-saving strategies in past year						
Asked for a generic form of Rx	15.81	16.74	11.19	10.67	16.84	***
Asked for Rx samples from the doctor	13.78	13.76	16.45	9.70	15.30	***
Compared prices for the best price	12.83	13.31	12.1	8.81	12.80	***
Purchased discounted Rx without using insurance	6.28	6.64	6.01	3.83	5.05	***
Any Rx cost-saving strategy	**32.43**	33.47	30.90	23.40	32.62	***

Sample is limited to beneficiaries aged 65 and older who participated in the MCBS Summer survey. Data source: MCBS PUF 2017–2020

Rx prescription drug(s)

[a]Group includes Asian, Native Hawaiian or Pacific Islander, American Indian or Alaska Native, and those who are in more than one category

[b]Tests of significance use Pearson's chi-squared test

[*]$p < 0.05$; [**]$p < 0.01$; [***]$p < 0.005$

appropriate for non-linear multivariable regression models and has been used to decompose health disparities between genders [36, 37] and immigrant groups [38, 39]. All analyses incorporated survey weights to account for sampling and attrition [40].

Results

Table 1 shows the descriptive characteristics of the study sample ($N = 26,909$) by racial and ethnic group, weighted to reflect the national population of Medicare beneficiaries ages 65 and older living in the community. About 77.5% of beneficiaries were non-Hispanic White; 8.5% were non-Hispanic Black; 7.7% were Hispanic or Latino/a; and the remaining 6.3% were Asian, Native Hawaiian, Pacific Islander, American Indian, Alaskan Native, or in a multi-race/ethnicity group. On average, more than half were aged 65 to 74 (59.44%), female (55.52%), and married at the time of the survey (56.05%). The majority had more than a high school education (57.52%) and incomes over 200% of FPL (66.80%). About 11.3% had partial or full Medicare-Medicaid dual enrollment in the past year. About 13.79% of beneficiaries were enrolled in the LIS program, about 78.80%

had Medicare drug coverage, and about 31.30% had a private plan with drug coverage. About 5.84% of the sample indicated they had trouble getting the health care they needed in the past year. About 15.33% reported worse fair or poor self-rated health compared to others of the same age (as opposed to good or excellent). There were significant differences in unadjusted sample characteristics between racial and ethnic groups in all three domains, demographic; socioeconomic status, insurance, and access; and health.

Table 2 reports racial and ethnic differences in experiencing prescription cost burden and engaging in cost-saving strategies without accounting for confounding factors. Non-Hispanic White beneficiaries were the least likely to have experienced any of the five cost burdens, while non-Hispanic Black beneficiaries were the most likely to have skipped, delayed, or not filled prescriptions. Non-Hispanic Black beneficiaries were also the most likely to have spent less on other essentials such as food or heating to save for prescription drugs (8.40% compared to the overall sample average of 3.92%). There were not significant differences between racial and ethnic groups in the percentage of beneficiaries who reported taking a smaller dose of their prescription drugs to make it last longer. Nearly 20% of non-Hispanic Black beneficiaries experienced at least one prescription

drug cost burden compared to 12.52% among non-Hispanic White and 15.28% among Hispanic/Latino beneficiaries. The fourth group that includes all other race and ethnicity groups experienced relatively high rates of prescription drug cost burden as well (18.07%), only second to non-Hispanic Black beneficiaries.

Even though non-Hispanic White beneficiaries were the least likely to experience cost burdens, they were the most likely to engage in at least one prescription drug cost-saving strategy. They shopped around for the best price and purchased discounted drugs without insurance to lower out-of-pocket costs at the highest rates. Non-Hispanic Black beneficiaries were the most likely to have requested or received drug samples from their healthcare providers (16.45%). Non-Hispanic Black beneficiaries and the group that includes all other race and ethnicity groups had the highest rates of asking for generics at 16.45% and 15.30% respectively. Hispanic or Latino/a beneficiaries had the lowest rates of engaging in any cost-saving strategy. Less than a quarter of Hispanic or Latino/a beneficiaries (23.40%) said they employed any strategy in the past year, compared to about a third among all other racial and ethnic groups (overall sample average of 32.43%). The percentages of Hispanic or Latino/a beneficiaries that asked for generics (10.67%) or drug samples (9.70%) from healthcare providers were notably low.

Some differences by race and ethnicity in prescription drug cost burden and use of cost-saving strategies persisted after controlling for demographic, socioeconomic status, insurance, access to care, and healthcare need factors (Table 3). A full set of regression results for specific prescription drug cost burden and cost-saving strategy outcomes are available in the Online Resource (Supplementary Tables 3 and 4). The first regression model in Table 3 examined racial and ethnic differences in experiencing prescription drug cost burden. In addition to demographic, socioeconomic, insurance, access, and health characteristics, this model also included engagement in prescription drug cost-saving strategies as a covariate. Excluding engagement in prescription drug cost-saving strategies slightly lowered the odds of experiencing cost burden for non-Hispanic Black and remaining racial and ethnic group beneficiaries, but these groups still exhibited significantly higher odds compared to non-Hispanic White beneficiaries (Supplementary Table 2). Differences in prescription drug cost burden between Non-Hispanic White and Hispanic or Latino/a beneficiaries became insignificant when accounting for covariates, but the greater likelihood of cost burden among non-Hispanic Black and remaining racial and ethnic group beneficiaries compared to non-Hispanic Whites remained large and significant. Compared to non-Hispanic Whites, both non-Hispanic Black beneficiaries and remaining racial and ethnic group beneficiaries had about 1.6 times higher odds of having experienced a prescription drug cost burden (respective log odds coefficients: 0.51 [95% CI 0.26, 0.75] and 0.48 [95% CI 0.26, 0.69]). Engaging in any prescription drug cost-saving strategy was associated with 4.76 times higher odds of having experienced a prescription drug cost burden (log odds coefficient: 1.56 [95% CI 1.45, 1.67]). Younger and female beneficiaries were more likely to experience a cost burden, and the likelihood decreased with higher educational attainment and high income. Enrollment in LIS was not significantly associated with cost burden, but beneficiaries dually eligible for Medicare and Medicaid (which provides automatic LIS eligibility) had lower odds of experiencing cost burden (OR 0.57, log odds coefficient: −0.56 [95% CI −0.87, −0.26]). Enrollment in Medicare Part D drug coverage was associated with higher odds of prescription drug cost burden (OR 1.29, log odds coefficient: 0.25 [95% CI 0.11, 0.4]), while enrollment in a private plan with drug coverage was associated with lower odds of prescription drug cost burden (OR 0.83, log odds coefficient: −0.18 [95% CI −0.29, −0.07]). Relatively, poor self-rated health, numerous chronic conditions, and trouble accessing care were also associated with a greater likelihood of prescription cost burden.

The second regression model reported in Table 3 presents differences in the odds of engaging in at least one prescription drug cost-saving strategy. There remained a large and significant difference of 0.69 lower odds of engaging in cost-saving strategies between Hispanic/Latino and non-Hispanic White beneficiaries even after controlling for relevant confounding factors (log odds coefficient: −0.38 [95% CI −0.53, −0.22]). In contrast, the lower rates of cost-saving strategy use among non-Hispanic Black and other groups compared to non-Hispanic Whites were largely explained by the additional factors included in the multivariate model, as the coefficients for both racial and ethnic groups compared were not significantly different from zero. Being younger, married, and having greater educational attainment were significantly positively associated with engaging in cost-saving strategies. Notably, beneficiaries with higher income were no more or less likely to engage in cost-saving strategies than beneficiaries with lower income. Instead, indicators of trouble getting access to care and having greater health needs (reporting relatively poor health and various common chronic conditions) were better predictors of prescription drug cost-saving strategy use.

Table 4 quantifies the sources of racial and ethnic disparities in prescription cost burden using KHB's decomposition method. Mediation effects can be interpreted as the average change in the likelihood of an outcome for one standard deviation change in the mediators. Mediation effects are presented as percentage points of total racial and ethnic disparity without the mediators after accounting for other controls. Table 4 shows that socioeconomic factors were large and significant mediators for non-Hispanic Black and Hispanic/

Table 3 Multivariate logistic regression on odds of experiencing prescription drug cost burden and engaging in cost-saving strategies among Medicare beneficiaries 65 and older, 2017–2020

		Experienced Rx cost burden				Engaged in at least one Rx cost saving strategy			
		OR[a]	Coef	Sig	95% CI	OR[a]	Coef	Sig	95% CI
Race/ethnicity[b]									
	Non – Hispanic White (ref.)								
	Non – Hispanic Black	1.66	0.51	***	[0.26, 0.75]	1.01	0.01		[−0.13, 0.16]
	Hispanic or Latino/a	1.26	0.23		[−0.02, 0.47]	0.69	−0.38	***	[−0.53, −0.22]
	Remaining groups c	1.61	0.48	***	[0.26, 0.69]	0.99	−0.01		[−0.16, 0.14]
Engaged in any Rx cost saving		4.76	1.56	***	[1.45, 1.67]				
Age group[b]									
	65–74 (ref.)								
	75 and over	0.66	−0.42	***	[−0.51, −0.32]	0.85	−0.16	***	[−0.23, −0.09]
Female[b]		1.32	0.28	***	[0.16, 0.4]	1.00	0.00		[−0.08, 0.08]
Not married		1.03	0.03		[−0.08, 0.13]	0.81	−0.21	***	[−0.29, −0.14]
Educational attainment[b]									
	Less than high school (ref.)								
	High school or vocational, technical, etc	0.97	−0.03		[−0.22, 0.16]	1.00	0.00		[−0.12, 0.12]
	More than high school	0.82	−0.20	*	[−0.38, −0.03]	1.18	0.16	*	[0.03, 0.3]
Income poverty ratio[b]									
	≤100% FPL (ref.)								
	100–135% of FPL	1.05	0.05		[−0.19, 0.29]	1.08	0.08		[−0.05, 0.21]
	135–200% of FPL	1.04	0.04		[−0.15, 0.24]	1.05	0.05		[−0.11, 0.21]
	>200% of FPL	0.65	−0.43	***	[−0.64, −0.23]	0.87	−0.14		[−0.29, 0.01]
Medicare-Medicaid dual eligible		0.57	−0.56	***	[−0.87, −0.26]	0.59	−0.53	***	[−0.84, −0.23]
Enrolled in LIS		0.99	−0.01		[−0.28, 0.25]	0.88	−0.13		[−0.41, 0.15]
Enolled in Medicare drug coverage[d]		1.29	0.25	***	[0.11, 0.4]	1.18	0.17	***	[0.07, 0.27]
Private plan with drug coverage		0.83	−0.18	***	[−0.29, −0.07]	0.95	−0.05		[−0.13, 0.03]
Trouble getting needed health care		2.33	0.85	***	[0.68, 1.02]	1.37	0.31	***	[0.16, 0.46]
Fair or poor health compared to others of same age[e]		1.44	0.37	***	[0.24, 0.5]	1.24	0.22	***	[0.13, 0.31]
Chronic conditions									
	Alzheimer's disease/dementia	0.70	−0.36	*	[−0.63, −0.09]	0.88	−0.13		[−0.32, 0.07]
	Arthritis	1.16	0.14	***	[0.06, 0.23]	1.27	0.24	***	[0.15, 0.32]
	Cancer	1.02	0.02		[−0.09, 0.13]	1.07	0.07		[−0.01, 0.15]
	CVD	1.31	0.27	***	[0.15, 0.38]	1.29	0.26	***	[0.18, 0.33]
	Depression	1.51	0.41	***	[0.31, 0.52]	1.26	0.23	***	[0.15, 0.31]
	Diabetes	1.24	0.22	***	[0.09, 0.34]	1.23	0.20	***	[0.12, 0.28]
	Emphysema/asthma/COPD	1.53	0.42	***	[0.32, 0.53]	1.36	0.31	***	[0.2, 0.42]
	Eye condition	1.08	0.08		[−0.03, 0.18]	1.26	0.23	***	[0.15, 0.31]
	High cholesterol	1.09	0.09		[−0.03, 0.2]	1.08	0.08	*	[0, 0.15]
	Hypertension	1.07	0.07		[−0.05, 0.18]	0.98	−0.02		[−0.09, 0.06]
	Osteoporosis	1.26	0.23	***	[0.1, 0.36]	1.06	0.06		[−0.02, 0.14]

Sample is limited to beneficiaries aged 65 and older who participated in the MCBS summer survey. Data source: MCBS PUF 2017–2020. Models additionally include year fixed effects

OR odds ratio, *Rx* prescription drug(s), *FPL* federal poverty level, *LIS* low-income subsidy, *CVD* cardiovascular disease, *COPD* chronic obstructive pulmonary disease

[a] Odds ratios are exponentiated coefficients

[b] MCBS PUF coarsens values to reduce risk of reidentification

[c] Group includes Asian, Native Hawaiian or Pacific Islander, American Indian or Alaska Native, and those who are in more than one category

[d] Includes drug coverage through medicare advantage, Part D, and retiree drug subsidy

[e] Recoded to binary outcome from a 5-point Likert scale ranging from excellent to poor

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.005$

Table 4 Contribution of socioeconomic, insurance, access to care, and health care need factors to racial and ethnic disparities in likelihood of experiencing prescription drug cost burden among Medicare beneficiaries 65 and older, 2017–2020

(Reference group: Non-Hispanic White)	Non-Hispanic Black			Hispanic or Latino/a			Remaining groups[h]		
	Coef	OR	Sig	Coef	OR	Sig	Coef	OR	Sig
Mediation from socioeconomic status [d]									
Total disparity (A) [a]	0.06	1.07	***	0.03	1.03	***	0.05	1.05	***
Mediation effect (B) [b]	0.01	1.01	***	0.01	1.01	*	0.002	1.00	***
Confounding % (100*B/A) [c]	13.8			30.0			3.8		
Mediation from insurance factors [e]									
Total disparity (A) [a]	0.05	1.05	***	0.02	1.02		0.04	1.05	***
Mediation effect (B) [b]	−0.01	0.99	***	−0.01	0.99	*	−0.004	1.00	***
Confounding % (100*B/A) [c]	−12.7			−31.7			−9.9		
Mediation from access to care									
Total disparity (A) [a]	0.05	1.06	***	0.02	1.02	*	0.05	1.05	***
Mediation effect (B) [b]	0.00	1.00	***	0.001	1.00	*	0.00	1.00	***
Confounding % (100*B/A) [c]	−0.3			5.5			2.5		
Mediation from health care need [f]									
Total disparity (A) [a]	0.05	1.05	***	0.02	1.02	*	0.05	1.05	***
Mediation effect (B) [b]	−0.002	1.00	***	0.001	1.001	*	0.00	1.00	***
Confounding % (100*B/A) [c]	−4.0			4.4			0.4		
Mediation from use of Rx cost-saving strategies [g]									
Total disparity (A) [a]	0.06	1.06	***	0.01	1.01	***	0.05	1.05	***
Mediation effect (B) [b]	0.001	1.00	***	−0.01	0.99	*	−0.001	1.00	***
Confounding % (100*B/A) [c]	1.5			−95.7			−1.2		

Sample is limited to beneficiaries aged 65 and older who participated in the MCBS summer survey. Data source: MCBS PUF 2017–2020. Decomposition analysis is based on the multivariate logistic regression on the odds of experiencing a prescription drug cost burden (Table 3). Models additionally control for respondents' demographic characteristics (age and gender) and year of survey

OR odds ratio, *Rx* prescription drug(s)

[a] Total disparity is the effect attributable to race/ethnicity without mediators and after controlling for concomitants (controls)

[b] Values can be interpreted as the average change in probability of having an outcome for one SD change in the mediators. Negative mediation effects indicate that the race/ethnicity group's characteristics are negatively associated with the likelihood of outcomes

[c] Confounding percentage is the mediation effect as a percentage of the total disparity. Negative confounding percentages indicate mediations effects that run counter to the total disparity. Values may differ from calculations using A and B due to rounding

[d] Socioeconomic factors include marital status, educational attainment, and income-to-poverty ratio

[e] Insurance status variables include Medicare-Medicaid dual eligibility, LIS enrollment, enrollment in Medicare Part D prescription drug plan, and enrollment in private insurance plan with drug coverage

[f] Health care need variables include chronic conditions and fair/poor health compared to others of same age

[g] Prescription drug (Rx) cost burden includes reduced, skipped, delayed, or did not fill prescription due to cost; and spent less on other necessities to save for prescription drugs

[h] Group includes Asian, Native Hawaiian or Pacific Islander, American Indian or Alaska Native, and those who are in more than one category

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.005$

Latino beneficiaries' greater likelihood of experiencing prescription cost burdens. 13.8% of the difference between non-Hispanic Black and non-Hispanic White beneficiaries and 30.0% of the difference between Hispanic/Latino and non-Hispanic White beneficiaries were explained by differences in income, education, and marital status. Insurance factors had modest mediation effects in the opposite direction of the total disparity for non-Hispanic Black beneficiaries, and beneficiaries identified in the remaining racial and ethnic group (-12.7% and -9.9% respectively). Insurance factors played a larger part (-31.7%) of Hispanic/Latino beneficiaries' greater prescription cost burden compared to non-Hispanic White beneficiaries. The negative confounding percentage suggests that Hispanic/Latino beneficiaries had a greater prescription cost burden than their health insurance plans may predict. The mediation effect of prescription drug cost-saving strategies for Hispanic/Latino beneficiaries was also negative, large, and significant. Model 1 in Table 3 showed that individuals who employed cost-saving strategies had higher odds of experiencing prescription drug cost burdens. The decomposition in Table 4 suggests that Hispanic/Latino beneficiaries' rates of using cost-saving strategies are far lower than non-Hispanic White beneficiaries despite their greater cost burden. Small and insignificant mediation effects of cost-saving strategies among non-Hispanic Black and remaining racial and ethnic group beneficiaries reinforce findings from Table 3; non-Hispanic White, non-Hispanic Black, and remaining racial and ethnic group beneficiaries have similar rates of engaging in cost-saving strategies when controlling for socioeconomic, insurance, access, and need factors. Additionally, differences in healthcare access and need were not substantial mediators for racial and ethnic disparities in prescription cost burden.

Discussion

Recent policy changes in prescription drug costs reduced out-of-pocket costs for Medicare beneficiaries. Such policies included reducing coinsurance and ultimately closing the Part D coverage gap [41]. Yet, incremental improvements have not eliminated racial and ethnic disparities in prescription drug cost burden, and our study suggests that an underlying philosophy guiding prescription drug access— placing the onus on individuals to become effective consumers to manage their prescription drug costs—reinforces existing racial and ethnic health and economic inequities. Our findings that racially and ethnically marginalized Medicare beneficiaries aged 65 and older were more likely than non-Hispanic Whites to experience prescription drug cost burden aligns with a large body of evidence on racial and ethnic disparities in prescription drug access and cost burdens among older adults in the US [42–44]. Non-Hispanic

Black beneficiaries experienced at least one prescription drug cost burden at a rate of 19.60%, followed by beneficiaries in other racial and ethnic groups at 18.07%, and Hispanic/Latino beneficiaries at 15.28%. In contrast, the rate among non-Hispanic White beneficiaries was 12.52%. In the fully adjusted model, differences by race and ethnicity in the odds of experiencing prescription drug cost burden remained highly significant between non-Hispanic Black and non-Hispanic other racial and ethnic group beneficiaries compared to non-Hispanic White beneficiaries. These differences underscore racial and ethnic inequities beyond systemic inequality in socioeconomic, health status, and other relevant factors specified in our model. However, the higher prescription drug cost burden among Hispanic/Latino beneficiaries compared to non-Hispanic White beneficiaries was not statistically significant in the same adjusted model, suggesting that the measured factors may be extremely important to understand and mitigate disparities in drug cost burden in this population.

Socioeconomic inequalities between racial and ethnic groups accounted for about 13.8% of older non-Hispanic Black and 30% of Hispanic/Latino beneficiaries' greater prescription drug cost burden compared to non-Hispanic Whites. Additionally, Hispanic/Latino beneficiaries' lower enrollment in health insurance plans with drug coverage or insurance subsidy programs like LIS as well as their lower likelihood of using cost-saving strategies were drivers of their greater prescription drug cost burden compared to non-Hispanic Whites. Previous research identified a critical gap in the awareness of LIS among older Hispanic/Latino beneficiaries attributed to Spanish language preference [22], with implications for lower drug subsidy enrollment among Hispanic/Latino beneficiaries compared to other groups. Heterogeneity among beneficiaries in the group that includes Asian groups, Native Hawaiians, Pacific Islanders, American Indian, Alaskan Natives, and individuals who indicated more than one racial or ethnic group likely contributes to the lack of a distinct trend in primary mediating factors observed in the decomposition analysis.

Variables beyond what our data covered also likely affected beneficiaries' prescription drug cost burden. Marginalized racial and ethnic groups have lower levels of health insurance literacy compared to non-Hispanic Whites [20, 45, 46]. Health insurance literacy is associated with both cost-saving strategies and prescription drug cost burden, as well as correlated with socioeconomic status [3–5]. Although health insurance literacy could not be fully accounted for in our analysis, its predicted effect based on our conceptual model would be to bias our results toward the null, meaning its omission would lead to more conservative, or underestimated results compared to true associations. Health insurance literacy may be an especially important factor for older Hispanic/Latino adults because of language or cultural

factors. Also, living in rural areas or being a non-US citizen could exacerbate Hispanic/Latino Medicare beneficiaries' lower engagement in cost-saving strategies [47, 48]; although, our results were robust to additionally controlling for rural residence. How racial and ethnic inequities in prescription drug cost burden and cost-saving strategies change as a more diverse and information-savvy generation ages into Medicare remains to be studied.

Additionally, the cross-sectional study design limits our ability to infer causality between cost-saving strategies and prescription drug cost burden. While our focus is on how using cost-saving strategies can reduce the burden of prescription drug costs, the reverse relationship—how prescription drug cost burden can drive use of cost-saving strategies—is important to consider. Our conceptual framework identified a negative relationship between cost-saving strategies and prescription drug cost burden, and positive relationship between prescription drug cost burden and cost-saving strategies, implying a reverse relationship. We found that engaging in any cost-saving strategy was associated with significantly higher odds of prescription drug cost burden (OR 4.90, $p < 0.005$, Table 3), suggesting that the bidirectional relationship is stronger in the reverse direction from our hypothesized relationship between cost-saving strategies and reduced cost burden, resulting in more conservative estimates in the mediation analysis. The mediation analysis still finds that use of cost-saving strategies was associated with reduced racial and ethnic differences in prescription drug cost burden, especially for Hispanic or Latino/a beneficiaries. Another limitation is that differences in the use of prescription cost-saving strategies may not fully capture actual savings. For example, asking for the generic version of a prescription may have a negligible impact on costs for some beneficiaries as generic drugs can be automatically substituted at the pharmacy when using Medicare Part D. Also, providers' access to drug samples, which would determine how much a patient can save by asking for samples, may be correlated with community characteristics or specific health conditions. Racial and ethnic differences in engaging in any of the cost-saving strategies, however, suggest systemic inequalities in patients' empowerment, self-efficacy, or ability to advocate for their health and financial well-being.

Another consideration is that the prevalence of Alzheimer's disease and dementia in our study sample (3.2%) is much lower than in the general Medicare population over 65 (12%) [49]. Racial and ethnic disparities in Alzheimer's disease and dementia, and the associated higher total and out-of-pocket prescription drug costs [50], and likely difficulty using cost-reducing strategies, may influence our study results. This underrepresentation could underestimate the true prescription drug cost burden and impact of disparities in the broader Medicare population. We also note that this study includes data from 2020, which had unique healthcare access challenges and needs beginning around March due to the onset of the COVID-19 pandemic in the US. Our models controlled for the survey year to account for this and other year-to-year variations in our pooled analysis and excluding the 2020 data from our sample in sensitivity analysis did not meaningfully change our findings. The COVID-19 pandemic widened many racial and ethnic disparities in social determinants of health [51], and further research could explore the effect of the COVID-19 pandemic on inequities in prescription drug cost burden and cost-saving strategies. Despite these limitations, our study takes advantage of recent data to address key gaps in understanding by exploring a comprehensive and rich set of mediating factors. We investigate how socioeconomic, insurance, health status factors, as well as use of cost-saving strategies contribute to racial and ethnic disparities in prescription drug cost burden among Medicare beneficiaries. This analysis is important for understanding systemic and modifiable dynamics of persistent disparities, to inform targeted interventions to enhance equity in prescription drug access among older adults with implications for their health and financial well-being.

Our results draw attention to an urgent need for efforts to reduce the cost burden of prescription drugs with particular attention to older Hispanic/Latino beneficiaries who, on average, face significant cost burdens but are less likely to engage in cost-saving strategies and have relatively less prescription drug insurance coverage contributing to higher out-of-pocket costs. Patient education about cost-saving strategies and provider training to improve patient-provider relationships and facilitate conversations about costs could help to lower the cost burden of prescription drugs and reduce inequities [13, 52]. Community health workers may also be able to help reduce systematic differences in the use of prescription drug cost-saving strategies through patient education and advocacy, for example, by helping patients compare prices for the lowest price or enroll in supplemental benefits like LIS.

Among several ongoing efforts to lower the prescription drug cost burden for older adults, two major steps forward are the total annual out-of-pocket cost cap for Part D enrollees at $2000 [53], and drug price negotiation initiated by the Centers for Medicare and Medicaid Services for select drugs [54, 55]. While the impact on racial and ethnic disparities in cost burden and access to prescription drugs remains to be determined, we posit that such systemic changes will address inequities to a greater extent than interventions targeting individual behaviors.

Declarations

Ethics Approval Ethical approval was waived by the Emory University Institutional Review Board in view of the retrospective nature of the study and use of deidentified data.

Competing Interests The authors declare no competing interests.

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