

ORIGINAL RESEARCH

Supplemental Nutrition Assistance Program Participation and Medication Adherence Among Medicaid-Insured Older Adults Living with Hypertension

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BACKGROUND: Food insecurity has been associated with medication non-adherence among individuals living with chronic diseases like hypertension. The relationship between Supplemental Nutrition Assistance Program (SNAP)—a public program that addresses food insecurity—and Medication adherence among older Medicaid-insured adults living with hypertension is not clear.

OBJECTIVE: To analyze the association between patterns of SNAP participation and adherence to antihypertensive medications among older Medicaid-insured individuals.

DESIGN: Retrospective study using linked 2006–2014 state of Missouri's Medicaid claims and Supplemental Nutrition Assistance Program data.

PARTICIPANTS: Older adults (≥ 60 years) who were continuously enrolled in Medicaid for 12 months following their first observed claim for hypertension at or after age 60.

MAIN MEASURES: The outcome measure was medication adherence assessed using the proportion of days covered (PDC). The exposure measures were as follows: (1) receipt of SNAP benefits (no [0], yes [1]); (2) SNAP benefits receipt during the 12-month Medicaid continuous enrollment (no [0], yes [1]); (3) duration of SNAP participation during the 12-month continuous Medicaid enrollment; and (4) SNAP participation pattern.

KEY RESULTS: On multivariable analyses, there was a statistically significant association between ever participating in SNAP and medication adherence ($\beta = 0.32$; S.E. = 0.011). Compared to those who participated in SNAP for 1–3 months during the 12-month continuous enrollment, there was an increased likelihood of medication adherence among those who were enrolled for 10–12 months ($\beta = 0.44$, S.E. = 0.041).

CONCLUSIONS: Medicaid-insured older adults who are SNAP participants or enrolled in SNAP for 10–12 months of a 12-month Medicaid continuous enrollment period are more likely to be adherent to antihypertensive medication compared to non-SNAP participants or those enrolled for 1–3 months, respectively.

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INTRODUCTION

Hypertension is a leading modifiable cardiovascular disease risk factor and contributes significantly to morbidity and mortality rates in the USA.^{1,2} About 74.5% of US adults 60 years and older (older adults) were living with hypertension between 2017 and 2018.³ Less than half (49.4%) of older adults living with hypertension had controlled blood pressure (SBP/DBP $< 140/90$ mm Hg) between 2015 and 2016.⁴ Medication non-adherence, which occurs when patients do not take medications as prescribed by their healthcare providers and is often measured using medication refill,⁵ contributes to sub-optimal hypertensive outcomes, such as poorly controlled blood pressure, increased likelihood of hospitalizations, and higher healthcare costs.^{6–8} Antihypertensive medication non-adherence is associated with worse outcomes among low-income individuals compared to their higher-income counterparts.⁹

The Medicaid program is a public insurance program that provides health insurance coverage, including prescription drug coverage, to low-income individuals. Although Medicaid eligibility rules vary across states, all states provide outpatient prescription drug coverage to participants.¹⁰ Several states, like the state of Missouri, restrict the maximum day supply to 31 days,¹¹ which is associated with reduced medication adherence.¹² Reduced maximum day supply could stretch limited resources by increasing travel cost to pharmacies and out-of-pocket payment due to frequency of refills.^{12,13} Stretched resources could be precarious for food-insecure Medicaid-insured individuals.

Food insecurity—the inability of all household members to access adequate and nutritious food consistently—has been associated with a dose-response relationship with cost-related medication non-adherence.^{14,15} Medication non-adherence among food-insecure individuals is attributable to competing demands whereby food-insecure individuals may trade off

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medications for food.^{16,17} This trade-off could ultimately lead to avoidable healthcare utilization and spending, further worsening food insecurity, with a resultant cycle of poorer health outcomes, more healthcare spending, and more food insecurity.^{16–23} The association between food insecurity and medication non-adherence is worrisome for low-income older adults living with hypertension given that 35.3% of the 13.8 million households that experienced food insecurity in 2020 were households with annual income below the federal poverty level compared to 4.9% of households with incomes at or above 185% of the federal poverty level.²⁴ In addition, about 2.8 million households with an elderly person experienced food insecurity in 2020.²⁴

The Supplemental Nutrition Assistance Program (SNAP)—the largest public safety-net program that targets food insecurity in the USA—could protect against medication non-adherence. SNAP is a means-tested program that provides monthly benefits for food purchase to individuals with gross household income $\leq 130\%$ of the federal poverty level (FPL)²⁵ and could therefore reduce competing demands between food and healthcare.^{26,27} Studies have consistently shown that SNAP reduces food insecurity and poverty among participants.^{28,29} SNAP participation has been associated with better health and healthcare outcomes such as good or excellent self-rated health, more optimal healthcare use, fewer sick days, lower mortality rates, and reduced healthcare costs.^{30–36} Studies using nationally representative surveys have reported decreased likelihood of cost-related medication non-adherence among older SNAP participants compared to non-participants.^{37,38} However, these studies use population-based surveys which might be subject to recall and social desirability bias. Further, these previous studies did not explore whether stable SNAP participation or duration of participation is associated with medication adherence nor focus on individuals living with hypertension. Our study aims to fill these gaps using linked Medicaid and SNAP administrative claims data to analyze the relationship between SNAP participation and antihypertensive medication non-adherence among Medicaid-insured older adults living with hypertension.

METHODS

Data Source

This is a retrospective cohort study using the Missouri Medicaid administrative claims data linked to SNAP data from 2006 to 2014. The Medicaid claims data contained information on monthly Medicaid coverage, diagnosis, pharmacy claims, and demographic characteristics of Medicaid-insured individuals. Information on prescription claims were obtained from the pharmacy claims. The SNAP data contained information on demographics and monthly SNAP benefit receipt. The data linkage was performed by analysts at the MU Center for Health Policy through an agreement with the Missouri Department of Health and Human Services. Individuals were assigned masked project-specific identification numbers that

allowed linkage of the SNAP and Medicaid claim files. Medicaid-insured individuals who were not found in the SNAP file were considered as not enrolled in SNAP during our study period in Missouri.

Study Sample

The study sample included 69,823 older adults (≥ 60 years) who were continuously enrolled in Medicaid for 12 months following their first observed claim for hypertension at or after age 60 (referred to hereafter as the 12-month continuous enrollment period). We defined older adults as ≥ 60 years because USDA has different SNAP rules for this age group, termed the “elderly population.”³⁹ In comparison to the income threshold of $\leq 130\%$ of the federal poverty level (FPL) for SNAP eligibility,²⁵ Medicaid eligibility in the state of Missouri during the study period was $\leq 19\%$ FPL for non-elderly adults with children and $\leq 85\%$ FPL for adults with disabilities and adults ≥ 65 years.⁴⁰ Therefore, Medicaid-insured older adults in Missouri were eligible for SNAP during our study period.

Data Definitions

Hypertension was defined using the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) diagnosis codes for hypertension (401.x–405.x, 437.2) or hypertensive emergencies with acute target organ damage (362.81, 377.01, 428.0, 428.1, 428.20, 428.21, 428.23, 428.30, 428.31, 428.33, 428.40, 428.41, 428.43, 428.9, 410.x, 414.12, 443.21, 443.22, 443.23, 443.24, 443.29, 441.x, 430, 431, 432.x, 434.x, 435.x, 436, 437.2).⁴¹

Using the HEDIS 2017 final NDC lists, we defined antihypertensive medications as angiotensin II receptor blockers, angiotensin-converting enzyme inhibitors, beta-blockers, calcium-channel blockers, diuretics, vasodilators, or any combination antihypertensive.⁴²

Medication adherence was calculated using the proportion of days covered (PDC). For this study, PDC refers to the proportion of days an individual had access to antihypertensive medications (as evidenced by refills) for 12 months starting from the date of the first antihypertensive medication fill. The measure accounts for prescription refills that occur prior to the exhaustion of the previous refill. The Stata package *medadhere* was used to calculate the PDC.⁴³ In line with previous studies, 80% PDC was considered adherent.^{44,45}

Measures

The outcome measure was medication adherence assessed using PDC (0[$< 80\%$ PDC]; 1[$\geq 80\%$ PDC]). We had four independent variables of interest as follows: (1) whether an individual ever received SNAP benefits (0[no]; 1[yes]); (2) whether an individual who participated in SNAP received SNAP benefits during the 12-month Medicaid continuous enrollment (0[no], 1[yes]); (3) SNAP participation pattern

(1[any SNAP receipt within 6 months prior to hypertension diagnosis and for at least 11 months following diagnosis], 2[no SNAP receipt prior to diagnosis but continuous receipt following diagnosis], 3[SNAP receipt for at least 3 months in the year following diagnosis followed by no receipt for 4 or more months], 4[unstable SNAP participation representative of individuals who had intermittent SNAP participation that does not meet any of the previous definition]); and (4) duration of SNAP participation during the 12-month continuous Medicaid enrollment (1[=1–3 months], 2[4–6 months], 3[7–9 months], 4[10–12 months]). For ease of interpretation, the SNAP participation variable is presented as follows: 1 = “continuous participation,” 2 = “post-diagnosis participation,” 3 = “discontinued participation,” and 4 = “intermittent participation.” The analytic sample for models using the first independent variable includes all Medicaid-insured individuals regardless of SNAP participation. The analytic sample for models using the remaining three independent variables is restricted to those who ever participated in SNAP. Covariates were race, rural/urban residence, sex, age, year of refill, and Charlson comorbidity index score (CCI)—a weighted index that predicts 10-year mortality by accounting for the number and severity of comorbid diseases.^{46,47} Household size is included as a covariate in the models exploring patterns and duration of participation.

Statistical Analysis

We calculated the summary statistics of the baseline characteristics of the study sample. We then used bivariate and multivariable probit regression to analyze the association between the dependent and independent variables. We also report change in average marginal effects to allow comparison across models. To consider the robustness of our findings, we conducted four series of sensitivity analyses using the

following alternative models: (1) propensity score method, (2) restricted to those 60–64 years, (3) restricted to those who had an initial medication refill, and (4) using a continuous measure of PDC. All analyses were conducted using STATA/MP version 16.1. Statistical significance was assessed at the $\alpha = .05$ level. This study was categorized as exempt from Human Subject Research oversight by the (blinded) Institutional Review Board.

RESULTS

Table 1 shows summary statistics of the study sample. About 57% of the study sample were ever enrolled in SNAP while 43% were never enrolled in SNAP during the study period. About 42% of SNAP participants were adherent to their medications compared to 27% of non-participants. Urban and rural residents comprised approximately 59% and 41% of the study sample, respectively. A higher proportion of those who were Asian (77.1%), Black (66.6%), and in the other/unknown (64.6%) category were SNAP participants compared to those who were White (53.6%). SNAP participation decreased with age with the highest proportion of participants in the 60–64 years category (72.1%) followed by 65–69 years (66.9%), 70–79 years (54.2%), and then 80 years or older (23.9%). The mean CCI for SNAP participants was 2.81 (std. dev. = 2.48) compared to 3.35 (std. dev. = 2.57) for non-SNAP participants.

Regression Analyses

On bivariate analyses, individuals who were ever on SNAP during the study period were more likely to be adherent to medications compared to non-SNAP beneficiaries ($\beta = 0.42$; S.E. = 0.010) (Table 2). This relationship persisted after adjusting

Table 1 Characteristics of Older Medicaid-Insured Individuals living with Hypertension

		Total n(%)	Non-SNAP Participant n(%)	SNAP Participant n(%)	P-value
Total			30,145 (43.2)	39,678 (56.8)	
Race					<.0001
	White	52478 (75.2)	24354 (46.4)	28124 (53.6)	
	Black	13227 (18.9)	4420 (33.4)	8807 (66.6)	
	Asian	687 (0.9)	157 (22.9)	530 (77.1)	
	Other/Unknown	3431 (4.9)	1214 (35.4)	2217 (64.6)	<.0001
Sex					<.0001
	Male	22545 (32.3)	9954 (44.2)	12591 (55.8)	
	Female	47278 (67.7)	20191 (42.7)	27087 (57.3)	
Residence					0.076
	Urban	41345 (59.2)	17964 (43.4)	23381 (56.6)	
	Rural	28478 (40.8)	12181 (42.8)	16297 (57.2)	
Age (years)					<.0001
	60–64	27109 (38.8)	7571 (27.9)	19538 (72.1)	
	65–69	9730 (13.9)	3219 (33.1)	6511 (66.9)	
	70–79	16291 (23.3)	7469 (45.8)	8822 (54.2)	
	≥80	16693 (23.9)	11886 (71.2)	4807 (28.8)	
Medication Adherence					<.0001
	No	45,035 (64.5)	22,057 (73.2)	22,978 (57.9)	
	Yes	24,788 (35.5)	8,088 (26.8)	16,700 (42.1)	
	Mean (S.D)		Mean (S.D)	Mean (S.D)	
Charlson comorbidity index		3.04 (2.54)	3.35 (2.57)	2.81 (2.48)	<.0001

Table 2 Regression Analyses of Medication Adherence and SNAP Participation among Older Medicaid-Insured Individuals living with Hypertension

	Ever on SNAP during the Study Period (n=69,823)		SNAP participation during the 12-month continuous Medicaid enrollment (n=39,678)	
	Bivariate β (S.E)	Multivariable β (S.E)	Bivariate β (S.E)	Multivariable β (S.E)
SNAP Participation				
Non-participant	Ref.	Ref.		
Participant	0.42 (0.010) ***	0.32 (0.011) ***		
Concurrent SNAP and Medicaid enrollment				
No			Ref.	Ref.
Yes			0.27 (0.018) ***	0.24 (0.018) ***
Age (years)				
60–64		Ref.		Ref.
65–69		–0.31 (0.016) ***		–0.33 (0.019) ***
70–79		–0.28 (0.013) ***		–0.25 (0.017) ***
80+		–0.47 (0.014) ***		–0.37 (0.021) ***
Sex				
Male		Ref.		Ref.
Female		0.13 (0.011) ***		0.13 (0.014) ***
Race				
White		Ref.		Ref.
Black/African American		–0.10 (0.014) ***		–0.14 (0.017) ***
Asian		0.09 (0.050)		0.06 (0.057)
Other Race/Unknown		–0.02 (0.023)		–0.02 (0.029)
Residence				
Rural		Ref.		Ref.
Urban		–0.24 (0.011) ***		–0.22 (0.014) ***
Charlson comorbidity index		0.03 (0.002) ***		0.04 (0.003) ***
Year				
2006		Ref.		Ref.
2007		0.17 (0.017) ***		0.18 (0.023) ***
2008		0.31 (0.018) ***		0.29 (0.023) ***
2009		0.33 (0.018) ***		0.30 (0.024) ***
2010		0.22 (0.019) ***		0.22 (0.024) ***
2011		0.24 (0.019) ***		0.23 (0.025) ***
2012		0.31 (0.019) ***		0.28 (0.025) ***
2013		0.22 (0.023) ***		0.21 (0.030) ***

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

for covariates although the magnitude attenuated ($\beta = 0.32$; S.E. = 0.011). Multivariable analysis also showed a higher likelihood of medication adherence among those who were on SNAP during the 12-month continuous Medicaid enrollment compared to those who were not on SNAP during this period ($\beta = 0.24$; S.E. = 0.018).

Table 3 shows findings from regression analyses for SNAP participation pattern and duration of participation. On bivariate analyses, compared to the “continuous participation” group, there was an increased likelihood of medication adherence among the “post-diagnosis” group and a decreased likelihood among the “discontinued” and “intermittent” groups. On multivariable analysis, compared to those who were continuously on SNAP, the relationship between medication adherence and “post-diagnosis SNAP participation” was no longer statistically significant while there was still a significantly decreased likelihood of medication adherence among the “discontinued” ($\beta = -0.36$, S.E. = 0.031) and “intermittent” SNAP participation groups ($\beta = -0.39$, S.E. = 0.027) compared to the “continuous participation” group.

The relationship between SNAP participation for 4–6 or 7–9 months and medication adherence was positive but not statistically significant on bivariate and multivariable analyses. Those who were enrolled in SNAP for 10–12 months had a

higher likelihood of medication adherence compared to those who were enrolled for 1–3 months on bivariate analysis; this persisted after adjusting for covariates ($\beta = 0.44$, S.E. = 0.041).

Average Marginal Effects

There was a 12-percentage-point increase in medication adherence among those who ever participated in SNAP compared to non-participants (Table 4). There was a 9-percentage-point increase in medication adherence among those who participated in SNAP during the 12-month continuous Medicaid enrollment compared to those who did not participate in SNAP during this period. Those who discontinued participation or who experienced intermittent participation had a 14-percentage- and 15-percentage-point decrease in medication adherence, respectively, compared to those who participated continuously. There was a 16-percentage-point increase in medication adherence among those who were enrolled in SNAP for 10–12 months compared to those who were enrolled for 1–3 months.

Sensitivity analyses

To address concerns of self-selection on SNAP participation, duration, and patterns, we conducted sensitivity analyses with

Table 3 Regression Analyses of Medication Adherence and SNAP Participation Pattern and Duration of Participation among Older Medicaid-Insured Individuals living with Hypertension (n=33,347)

		SNAP Participation Pattern (n=33,347)		Duration of SNAP Participation (n=33,347)	
		Bivariate β (S.E)	Multivariable β (S.E)	Bivariate β (S.E)	Multivariable β (S.E)
SNAP Participation Pattern					
	Continuous	Ref.	Ref.		
	Post-diagnosis	0.07 (0.020) **	−0.02 (0.021)		
	Discontinued	−0.33 (0.030) ***	−0.36 (0.031) ***		
	Intermittent	−0.36 (0.026) ***	−0.39 (0.027) ***		
Months on SNAP					
	1–3 months			Ref.	Ref.
	4–6 months			0.10 (0.051)	0.10 (0.052)
	7–9 months			0.08 (0.050)	0.07 (0.051)
	10–12 months			0.42 (0.040) ***	0.44 (0.041) ***
Age (years)					
	60–64		Ref.		Ref.
	65–69		−0.36 (0.020) ***		−0.35 (0.020) ***
	70–79		−0.28 (0.019) ***		−0.28 (0.018) ***
	80+		−0.36 (0.024) ***		−0.36 (0.024) ***
Sex					
	Male		Ref.		Ref.
	Female		0.13 (0.015) ***		0.13 (0.015) ***
Race					
	White		Ref.		Ref.
	Black/African American		−0.14 (0.018) ***		−0.15 (0.018) ***
	Asian		0.04 (0.060)		0.04 (0.060)
	Other Race/Unknown		−0.02 (0.031)		−0.02 (0.031)
Residence					
	Rural		Ref.		Ref.
	Urban		−0.21 (0.015) ***		−0.21 (0.015) ***
Charlson comorbidity index			0.04 (0.003) ***		0.04 (0.003) ***
Year					
	2006		Ref.		Ref.
	2007		0.18 (0.026) ***		0.19 (0.026) ***
	2008		0.28 (0.026) ***		0.28 (0.026) ***
	2009		0.29 (0.026) ***		0.30 (0.026) ***
	2010		0.24 (0.026) ***		0.24 (0.026) ***
	2011		0.23 (0.027) ***		0.23 (0.027) ***
	2012		0.27 (0.027) ***		0.26 (0.027) ***
	2013		0.22 (0.032) ***		0.21 (0.032) ***
Household size			0.03 (0.010) **		0.03 (0.010) **

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$ **Table 4 Average Marginal Effects of SNAP Participation, Participation Pattern and Duration of Participation among Older Medicaid-Insured Individuals living with Hypertension**

		Bivariate AME (S.E.)	Multivariable AME (S.E.)
Model 1: SNAP participation (n=69,823)			
	Non-participant	Ref.	Ref.
	Participant	0.15 (0.004) ***	0.12 (0.004) ***
Model 2: Concurrent SNAP and Medicaid enrollment (n=39,678)			
	No	Ref.	Ref.
	Yes	0.10 (0.007) ***	0.09 (0.007) ***
Model 3: SNAP Participation Pattern (n=33,347)			
	Continuous	Ref.	Ref.
	Post-diagnosis	0.03 (0.008)	−0.01 (0.008)
	Discontinued	−0.13 (0.011) ***	−0.14 (0.011) ***
	Intermittent	−0.14 (0.010) ***	−0.15 (0.010) ***
Months on SNAP (n=33,347)			
	1–3 months	Ref.	Ref.
	4–6 months	0.03 (0.018)	0.04 (0.018)
	7–9 months	0.03 (0.018)	0.02 (0.018)
	10–12 months	0.16 (0.014) ***	0.16 (0.014) ***

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

propensity score weighting where we predicted SNAP participation status, pattern or duration using age, Charlson comorbidity index, sex, race, and residence. The results were consistent with the main findings (Supplemental File, Table S1). Second, we conducted sensitivity analyses restricted to individuals 60–64 years because individuals who are ≥ 65 years are Medicare-eligible and therefore potentially different from those who are 60–64 years on unobserved characteristics. The results were also consistent with the main findings (Supplemental File, Table S2). Our analyses restricted to those who had an initial prescription refill following a hypertension diagnosis were also consistent with the main results (Supplemental File, Table S3). Finally, using PDC as a continuous variable showed that the relationship between SNAP participation for 4–6 months, 7–9 months, or 10–12 months during the 12-month continuous Medicaid enrollment and PDC was statistically significant, in contrast to the main findings. All other findings were consistent with the main results (Supplemental File, Table S4).

DISCUSSION

In this study, we examined the relationship between SNAP participation and antihypertensive medication adherence among older adults (≥ 60 years) who were continuously enrolled in Medicaid for 12 months following their first observed claim for hypertension at or after age 60. We found that SNAP participation decreased as age of first observed claim with a diagnosis of hypertension increased. We also found that Medicaid-insured older adults living with hypertension who had ever been on SNAP and those concurrently enrolled in SNAP and Medicaid were more likely to be adherent to their antihypertensive medications compared to those who had never been on SNAP or who were not concurrently enrolled in Medicaid and SNAP, respectively. Those who transitioned off SNAP or who participated intermittently were less likely to be adherent to their medications compared to those who participated continuously. Among those who were on SNAP during the 12-month continuous Medicaid enrollment period, those who were enrolled in SNAP for 10–12 months were more likely to be adherent compared to those enrolled for 1–3 months.

Our finding of increased likelihood of medication adherence among SNAP participants compared to non-participants is in agreement with two previous studies that used a population-based survey, although our estimates are larger in magnitude.^{37,38} The difference in magnitude could be because these previous studies focused specifically on cost-related medication use as measured by a survey while our study focuses on medication non-adherence as measured by pharmacy claims, which may be related to other factors other than costs. The lower magnitude of the effect sizes in the studies by Pooler et al. and Srinivasan et al. could also be due to the documented underreporting in SNAP participation in population surveys; therefore, their estimates are likely more conservative.⁴⁸ Further, the studies by Pooler et al. and Srinivasan et al. focused on a more economically advantaged group with gross incomes up to 130% FPL, per SNAP eligibility rules. In contrast, Missouri Medicaid eligibility during our study period was limited to low-income adults with children and gross income $\leq 19\%$ FPL or $\leq 85\%$ FPL for those living with disabilities and those ≥ 65 years.⁴⁰ The larger magnitude of estimated coefficients in our study could be due to the focus on more economically disadvantaged individuals. This inference is in line with another previous study that found a stronger relationship between increased SNAP benefit amount and reduced probabilities of hypertension-related ED claims among those with unearned income compared to those with earned income.⁴⁹

Our finding of decreased medication adherence among those who participated in SNAP intermittently or who discontinued participation compared to those who participated continuously is consistent with the study by Arteaga and colleagues.⁵⁰ Arteaga et al. found that infants of those who had unstable SNAP participation were less likely to receive all recommended well-child visits in the first year of life compared to infants of individuals who were consistently on SNAP.⁵⁰ Our finding of increased

likelihood of medication adherence among those who were enrolled in SNAP for 10–12 months during a 12-month Medicaid continuous enrollment period compared to those who were enrolled for 1–3 months is also consistent with the findings of Heflin et al.⁵¹ The study by Heflin and colleagues, which focused on non-elderly Medicaid-insured residents of Missouri, found that SNAP participants who experienced administrative churn—defined as SNAP disenrollment and reenrollment within 4 months—were less likely to have prescription drug claims and more likely to have inpatient claims.⁵¹ Although we cannot identify the specific mechanisms by which continuous SNAP participation supports medication adherence in our study, one possibility is that the loss of SNAP benefits leads low-income older adults to reallocate their limited resources from medication to food, which could lead to medication non-adherence.

The demonstrated relationship between food insecurity and sub-optimal clinical outcomes has led to interventions that aim to connect patients to food resources such as interventions to enroll eligible patients in SNAP.⁵² There are also policy efforts to facilitate SNAP enrollment and retention, like the Elderly Simplified Application Project that aims to simplify the SNAP application and recertification process for older adults.⁵³ Several states are also exploring strategies to coordinate and synchronize SNAP and Medicaid enrollment and recertification for individuals who are eligible for both programs.⁵⁴ Such interventions may be important for adults 60 years or older who are historically less likely to participate in SNAP compared to the general population. For example, in 2019, 82% of all SNAP-eligible individuals participated in SNAP compared to 48% of older adults.⁵⁵ Future studies are needed to understand the potential of clinical and policy efforts to increase SNAP enrollment to further support medication adherence among older Medicaid-insured individuals.

Our findings should be considered in the context of two limitations. First, our study setting was restricted to the state of Missouri from 2006 through 2014 and as such might not be generalizable to other states or period. Second, we cannot imply causality from our findings due to the cross-sectional study design. While sensitivity analysis using propensity score weighting addresses potential selection bias due to observed differences between SNAP and non-SNAP participants, it does not control for selection on unobservable factors. Thus, results should be interpreted with caution.

Our study has noteworthy strengths. First, our use of administrative claims data to identify prescription refill removes the likelihood of recall or social desirability bias that could occur with population-based surveys. Second, our ability to analyze different measures of SNAP participation and our sensitivity analyses enhanced the robustness of our findings.

In conclusion, we found an increased likelihood of medication adherence among older Medicaid-insured adults who participated in SNAP compared to non-SNAP participants. This suggests that clinical and policy interventions aimed at increasing SNAP enrollment among eligible individuals and those that support stable SNAP participation may help to promote adherence to

anti-hypertensive medications among Medicaid-insured older adults. It could therefore be important to explore such approaches as a means of improving health outcomes among low-income older adults living with hypertension.

Supplementary Information The online version contains supplementary material available at <https://doi.org/10.1007/s11606-022-07994-4>.

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Declarations:

Conflict of Interest: The authors declare that they do not have a conflict interest.

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