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College of Pharmacy

Prescription Drug Coverage Type, Out-Of-Pocket Spending, and Cost-Related Nonadherence Among **Medicare Beneficiaries with Rheumatoid Arthritis Dandan Zheng, M.S. and Joseph Thomas III, Ph.D.**

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Introduction

Cost-related nonadherence (CRN) defined as taking medication less than prescribed due to cost, has been reported as a highly prevalent problem in rheumatoid arthritis (RA). CRN has been associated with negative outcomes, such as more healthcare utilization, poorer health, and higher mortality. Identifying factors associated with CRN can inform policies to reduce barriers to medication adherence and improve patients' health and quality of life.

We assessed association between drug coverage type, out-ofpocket (OOP) medication cost, and CRN among Medicare population with RA.

Methods

Results

Sample Selection

Among 11,798 person-years who had RA and responded to all CRN questions, 2,304 were less than 65 years old, 1,126 had Alzheimer's disease, dementia, mental retardation, or mental disorders, 137 had missing drug coverage responses, 0 were not community-dwelling, 6,388 had no RA-medication use. After applying all sample selection criteria, the sample included 1,843 person-years.

Sample Characteristics

Among the sample, 14.6% (95% C.I.: 13.0%-16.3%) had CRN. Sample distributions by demographics are shown in Table 1.

Association Between OOP Cost, Drug Coverage, and CRN

Patients with OOP \geq 5% of income were 2.3 times more likely to report CRN than those with <1% of income (*p*<0.01) after adjusting for other risk factors (Table 2). While in another model controlling for the same covariates, monthly OOP cost was not associated with CRN.

Data Source

A pooled cross-sectional analysis of 2009-2013 Medicare Current Beneficiary Survey (MCBS) data was conducted. The MCBS is a nationally representative, longitudinal panel survey with each sample interviewed over up to four consecutive years.

Predictor Variables and Response Variable

Drug coverage type and OOP cost of prescription drugs were predictor variables. Drug coverage type included no coverage, stand-alone Medicare prescription drug plan (PDP), Medicare Advantage Prescription Drug (MAPD) plan, PDP plus Medicaid, MADP plus Medicaid, TRICARE, and private plans. Monthly OOP cost and OOP cost as a proportion of income were assessed.

The response variable, CRN, was identified if there was a yes to any of the four questions about patients' prescribed drugs: 1) whether taking smaller doses or 2) skipped doses to make the medication last longer; 3) delayed getting a prescription filled or 4) decided not to fill a prescription because of cost.

Sample Selection Criteria

Sample inclusion criteria were being 65 years old, having RA, and non-missing responses to all CRN questions. RA was identified based on ≥ 1 Medicare Part A or ≥ 2 Part B claims with ICD-9-CM: 714.x or self-report of a doctor saying they had RA. Exclusion criteria were being institutionalized, nonresponse on any drug coverage questions, no RA-medication use, Alzheimer's disease, dementia, mental retardation, or mental disorders.

Patients with MADP plus Medicaid (O.R.=0.18, *p*=0.01), TRICARE (O.R.=0.12, *p*=0.02), or private plans (O.R.=0.43, *p*<0.01) were less likely to report CRN than those without drug coverage.

Table 2.	Multivariable Association Between OOP Cost, Drug Covera	age,
	and CRN (N=1,500) ¹	

OOP Cost as a Proportion of Income Ref. $0OP < 1\%$ of income 1.85 1.05 - 3.29 0.035 $2.5\% < COOP < 5\%$ of income 2.22 1.20 - 4.10 0.012 $OOP > = 5\%$ of income 2.33 1.23 - 4.41 0.010 Drug Coverage Type	Variables	Odds Ratio	95% C.I.	<i>p</i> value ²			
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$\begin{array}{c c c c c c c c c c c c c c c c c c c $	OOP < 1% of income	Ref.					
2.5%<=00P<5% of income	1%<=OOP<2.5% of income	1.85	1.05 - 3.29	0.035			
OOP>=5% of income 2.33 1.23 + 4.41 0.010 Drug Coverage Type	2.5%<=OOP<5% of income	2.22	1.20 - 4.10	0.012			
Drug Coverage Type 9DP only 0.63 0.33 - 1.22 0.172 MADP only 0.76 0.49 - 1.18 0.220 PDP + Medicaid 0.53 0.14 - 2.11 0.366 MADP + Medicaid 0.18 0.05 - 0.71 0.014 TRICARE 0.12 0.02 - 0.76 0.026 Private plan only 0.43 0.26 - 0.73 0.002 No Coverage Ref. - - - Age 65 to 69 years Ref. - <td>OOP>=5% of income</td> <td>2.33</td> <td>1.23 - 4.41</td> <td>0.010</td>	OOP>=5% of income	2.33	1.23 - 4.41	0.010			
PDP only 0.63 0.33 - 1.22 0.172 MADP only 0.76 0.49 - 1.18 0.220 PDP + Medicaid 0.18 0.05 - 0.71 0.014 MADP + Medicaid 0.18 0.05 - 0.71 0.014 TRICARE 0.12 0.02 - 0.76 0.026 Private plan only 0.43 0.26 - 0.73 0.002 No Coverage Ref. 7 0.74 years 0.61 0.39 - 0.96 0.032 75 to 79 years 0.28 0.17 - 0.47 <0.001	Drug Coverage Type						
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PDP + Medicaid 0.53 0.14 - 2.11 0.366 MADP + Medicaid 0.18 0.05 - 0.71 0.014 TRICARE 0.12 0.02 - 0.76 0.026 Private plan only 0.43 0.26 - 0.73 0.026 No Coverage Ref.	MADP only	0.76	0.49 - 1.18	0.220			
MADP + Medicaid 0.18 0.05 - 0.71 0.014 TRICARE 0.12 0.02 - 0.76 0.026 Private plan only 0.43 0.26 - 0.73 0.002 No Coverage Ref. - - Age - - - - 65 to 69 years Ref. - - - 70 to 74 years 0.61 0.39 - 0.96 0.032 75 to 79 years 0.28 0.17 - 0.47 <0.001	PDP + Medicaid	0.53	0.14 - 2.11	0.366			
TRICARE 0.12 0.02 - 0.76 0.026 Private plan only 0.43 0.26 - 0.73 0.002 No Coverage Ref.	MADP + Medicaid	0.18	0.05 - 0.71	0.014			
Private plan only No Coverage 0.43 Ref. 0.26 - 0.73 Ref. 0.002 Age	TRICARE	0.12	0.02 - 0.76	0.026			
No Coverage Ref. Age	Private plan only	0.43	0.26 - 0.73	0.002			
Age Ref. 65 to 69 years Ref. 70 to 74 years 0.61 0.39 - 0.96 0.032 75 to 79 years 0.28 0.17 - 0.47 <0.001	No Coverage	Ref.					
65 to 69 years Ref. 70 to 74 years 0.61 0.39 - 0.96 0.032 75 to 79 years 0.28 0.17 - 0.47 <0.001	Age						
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75 to 79 years 0.28 0.17 - 0.47 <0.001	70 to 74 years	0.61	0.39 - 0.96	0.032			
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85 years or older 0.35 0.19 - 0.64 0.001 Gender Female 2.05 1.29 - 3.24 0.003 Male Ref. Employment 0.003 0.003 Unemployed Ref. Employment 0.003 0.001 Smoking Status Ref. 2.69 1.58 - 4.59 <0.001	80 to 84 years	0.27	0.16 - 0.45	<0.001			
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Analysis

Weighted multivariable logistic regression in SAS 9.4 for Unix assessed association between risk factors and CRN controlling for age, gender, employment, smoking status, perceived health, osteoporosis, depression, Activities of Daily Living (ADL), and Instrumental Activities of Daily Living (IADL). An alpha of 0.05 was used for significance.

Results

Table 1. Sample Distribution by Demographic Characteristics

Characteristic	Frequency	Percent			
Age $(N=1,843)^{1}$					
65 to 69 years	344	18.7			
70 to 74 years	410	22.3			
75 to 79 years	416	22.6			
80 to 84 years	371	20.1			
85 years or older	302	16.4			
Gender (N=1,843) ¹					
Male	586	31.8			
Female	1,257	68.2			
Race (N=1,797) ¹					
White	1,489	82.9			
Non-White	308	17.1			
Education (N=1,841) ¹					
Less than high school	275	14.9			
High school but no diploma	283	15.4			
High school graduate	558	30.3			
Post high school, but no degree	404	21.9			
Associate's or bachelor's degree	205	11.1			
Post graduate degree	116	6.3			
OOP Cost as a Proportion of Income (N=1,833) ¹					
OOP < 1% of income	419	22.8			
1%<=OOP<2.5% of income	537	29.3			
2.5%<=OOP<5% of income	465	25.3			
OOP>=5% of income	414	22.6			
Drug Coverage Type (N=1,739) ¹					
PDP only	225	12.9			
MADP only	429	24.7			
PDP + Medicaid	37	2.1			
MADP + Medicaid	73	4.2			
TRICARE	91	5.2			
Private plan only	341	19.6			
No Coverage	543	31.2			

Sample size N varies from 1,739 to 1,843 due to missing responses.

Sample size N is less than 1,843 due to missing responses.

 2 *P* values were obtained from logistic regression.

Limitations

The cross-sectional design allowed us to assess associations rather than to infer causality. CRN based on the MCBS is a selfreported measure. Bias due to recall or underreporting may occur.

Conclusions

Spending a higher proportion of income on OOP was associated with greater likelihood of CRN. Even after adjusting for OOP cost, MADP plus Medicaid, TRICARE, or private plans were associated with lower risk of CRN.