The Effect of Depression and Cognitive Impairment on Enrollment in Medicare Part D

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OBJECTIVES: To examine concerns that vulnerable populations, such as depressed or cognitively impaired beneficiaries would have challenges accessing Part D coverage.

DESIGN: Logistic regression analysis was used to assess whether elderly Medicare beneficiaries with depression or cognitive impairment differentially planned to and actually signed up for Part D.

SETTING: 2004 and 2006 data from the Health and Retirement Study (HRS) were used, including a subsample that completed the Prescription Drug Study (PDS) in 2005.

PARTICIPANTS: Nine thousand five hundred ninety-three HRS respondents and 3,567 PDS respondents.

MEASUREMENTS: The outcome variables of interest were planned and actual enrollment in Part D. The independent variables were depression and cognitive impairment status. The analyses were adjusted using clinical and demographic predictors including age, sex, race or ethnicity, educational attainment, net worth, marital status, health status, number of health conditions being treated with prescription medications, and presence of a caregiver.

RESULTS: Although having depression or cognitive impairment was associated with a higher likelihood of planning to and actually signing up for Part D in unadjusted analyses, in adjusted analyses, having depression or cognitive impairment was not significantly associated with whether Medicare beneficiaries planned to enroll in or actually enrolled in Part D.

CONCLUSION: Vulnerable Medicare beneficiaries with depression or cognitive impairment were able to access Part D benefits to the same extent as nonvulnerable beneficiaries. More research is needed to determine how well Part D meets the needs of these populations. **J Am Geriatr Soc 57:1433–1440, 2009.**

Key words: depression; cognitive impairment; Medicare Part D; prescription medications

The Medicare Modernization Act (MMA) of 2003 marked the largest change in Medicare since its inception in 1965.[1] The lack of a Medicare prescription drug benefit was probably a barrier to effective treatment for older adults. Elderly beneficiaries have chronic diseases and lower incomes and are burdened by drug prices. These factors can lead to cost-related nonadherence and avoidable deterioration of health.[2,3]

The MMA offered a new prescription drug program called Medicare Part D. Starting in 2006, Part D provided prescription drug coverage for seniors through private health plans. Although the ability to access drug coverage was an important advance for older adults,[4] concerns remained regarding the care that Part D beneficiaries might receive. These concerns were particularly salient for vulnerable beneficiaries,[5] such as those with emotional or cognitive disorders.[3,6–8] Older adults with emotional or cognitive disorders may have greater disease burdens, more disabilities, and expensive medication regimens, concurrent with barriers to accessing psychotropic medications under Part D such as prior authorization and "fail first" policies.[3,6,9] Furthermore, federally funded Medicaid drug coverage for 6.4 million dual eligibles was terminated in January 2006, regardless of whether beneficiaries obtained coverage through Part D or whether the Part D plan's coverage was as broad as the state's Medicaid coverage.[10] Beneficiaries with emotional or cognitive disorders may have been more likely to fall into this group, because nearly one-third of dual eligibles experience mental illness.[11]

This study sought to examine the effect of depression and cognitive impairment on enrollment in Part D. The Health and Retirement Study (HRS), a nationally representative

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sample of elderly Medicare beneficiaries, provided a unique opportunity to examine enrollment in Part D. This study examined whether depression or cognitive impairment affected planned enrollment before availability of Part D and whether depression or cognitive impairment affected actual enrollment in Part D. Findings could help identify potential barriers that these patients might face with accessing drug coverage.

METHODS

Study Populations

The 2004 and 2006 waves of the HRS and the 2005 HRS Prescription Drug Study (PDS) were used. The HRS is a nationally representative, longitudinal study of older Americans designed to assess the relationship between health and retirement and includes questions about prescription drug coverage.[12] The PDS is a subsample of the HRS drawn from respondents who participated in the HRS in 2004. It was designed to track changes in prescription use among beneficiaries as Medicare Part D was phased in.

The current study was conducted in two stages using two different samples (one examining planned enrollment and one examining actual enrollment in Part D). The inclusion criteria for both stages were participation in the 2004 and 2006 waves of the HRS, aged 65 and older in 2006 and therefore age-eligible for Medicare coverage, ability to provide responses without a proxy respondent, and living in the community (not in a nursing home) in 2004. To be included in the analyses on planned Part D enrollment, participation in the 2005 PDS was also required.

The institutional review board of the University of Michigan Medical School approved this research project, which received exempt status.

Dependent Variables

Planned Enrollment

In 2005, participants in the PDS were asked, "Thinking about this prescription drug coverage that will be offered to people on Medicare in 2006, how likely would you be to enroll in the prescription drug benefit offered through Medicare?" The possible responses were very likely, somewhat likely, not too likely, not at all likely, I have already enrolled, and don't know. A three-level variable was created: very likely, somewhat likely, or already enrolled; not too likely or not at all likely; or I don't know.

Actual Enrollment

Respondents who reported being covered by Medicare health insurance in 2006 were asked, "Beginning in 2006, Part D of Medicare provides coverage for prescription drugs. Did you sign up to receive Medicare prescription drug coverage in 2006?" The possible answers were yes, signed up; enrolled in it automatically; no, didn't sign up; and don't know or refused. A dichotomous variable indicating having Part D coverage (yes or automatically enrolled) or not was created. Respondents who did not know whether they had signed up or refused to answer were excluded from the analysis (163 were excluded: 162 who did not know and 1 who refused).

Independent Variables

The main predictor in each analysis was a combination of cognitive impairment and depressive symptoms determined using the 2004 HRS. The HRS cognitive function measure uses a 35-point scale to determine whether a respondent is cognitively impaired.[13] As in prior HRS studies, a respondent was considered to be cognitively impaired if they scored 10 or lower on the HRS cognitive scale.[14] To determine depressive symptoms, each self-respondent was asked the following questions from the Center for Epidemiologic Studies Depression Scale (CES-D)[15,16] with "yes" or "no" response options: (1) Much of the time during the past week, I felt depressed; (2) I felt everything I did was an effort; (3) My sleep was restless; (4) I was happy; (5) I felt lonely; (6) I enjoyed life; (7) I felt sad; and (8) I could not "get going." The total number of "yes" responses to questions 1, 2, 3, 5, 7, and 8 and "no" responses to questions 4 and 6 were summed for a total depressive symptom score ranging from 0 to 8. A respondent with a score of 4 or greater was considered to be depressed. Four mutually exclusive categories were created: No depression and no cognitive impairment; depression but no cognitive impairment; cognitive impairment, but no depression; and cognitive impairment and depression.

The following sociodemographic measures from the HRS 2004 were included as covariates in both studies: age (62–69, 70–79, $\geq$80), sex, race or ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, and other), years of education (0–11, 12, 13–15, $\geq$16), living arrangement (unmarried living alone, unmarried living with others, married), and quartiles of net worth ($\leq$\$52,000, \$52,001–\$158,000, \$158,001–\$395,000, $>$\$395,000). Analyses included an indicator of whether a respondent had any health conditions treated with medication, the number of such health conditions, fair or poor self-rated health, and type of health insurance coverage in 2004 (employer, Medicare, Medicaid, self-purchased, none). A variable indicating whether the respondent had a caregiver (who could have helped the respondent make prescription drug coverage choices),[17] defined as informal, formal, or any type of caregiver, was included.

Analytical Framework

Bivariate analyses were performed to determine the association between respondent characteristics and the four-part depression–cognitive impairment variable for all HRS respondents. A design-based Pearson chi-square test with a P-value ($P < .05$) was used to test the significance of these associations.

Planned Enrollment

Unadjusted multinomial logistic regression analysis (with three levels of nominal outcome—yes, no, don't know) was performed to determine the effect of each variable in predicting the likelihood of planned enrollment in Medicare Part D. Multivariate regression was used to determine the effect of depression and cognitive impairment in predicting Part D planned enrollment, after adjusting for covariates.

Actual Enrollment

Logistic regression analysis was used to determine the effect of each independent variable on actual Medicare Part D

enrollment. Multivariable logistic regression analysis was used to determine the effect of the depression–cognitive impairment variable in predicting actual Part D enrollment, after adjusting for covariates.

Adjusted analyses were conducted to help ensure that differences in demographic characteristics, health, or economic status, which could also influence coverage decisions, did not otherwise explain (confound) differences in Part D planned or actual enrollment according to depression and cognitive impairment status.[18] All analyses were weighted (using 2004 weights, because all predictors were from 2004) and adjusted for HRS's complex sampling design (stratification and clustering), and Stata 9.1 was used (StataCorp., College Station, TX).

RESULTS

Descriptive Analysis

Four thousand six hundred eighty-four individuals responded to the PDS questionnaire, and 3,663 (78.2%) met study criteria. After excluding those with missing responses (96 people, 2.6%), 3,567 individuals were identified. Of these 3,567 individuals, 1,110 (28.1%) said they would probably enroll in Part D, 1,603 (49.3%) said they would likely not enroll, and 854 (22.6%) did not know if they would enroll. Of the 3,567 individuals, 483 (12.9%) had depressive symptoms only, 118 (2.5%) had cognitive impairment with no depressive symptoms, and 54 (1.1%) had depressive symptoms and cognitive impairment.

Of the 20,147 respondents who participated in the 2004 HRS interview, 10,343 (51.3%) met study criteria. Of these 10,344 respondents, 9,733 (94.1%) reported having Medicare health insurance coverage in 2006. Of these 9,733 who had coverage, 140 (1.4%) responded "didn't know" or "refused" or were missing for the Medicare Part D question. These individuals were excluded, and 9,593 respondents representing approximately 32 million older Americans were identified. Of these 9,593 respondents, 3,401 (34.8%) signed up for Part D, and 598 (6.3%) were automatically enrolled. Thus, 3,999 (41.7%) individuals had Medicare Part D coverage in 2006.

Of the 9,593 respondents, 1,216 (12.5%) had depressive symptoms only, 274 (2.4%) had cognitive impairment without depressive symptoms, and 118 (1.1%) had depressive symptoms and cognitive impairment. Statistically significant associations were found between all baseline characteristics and the combination depression–cognitive impairment variable (Table 1). People with cognitive impairment only were older, people with depression and cognitive impairment were younger, and women had higher rates of both disorders. Blacks and Hispanics made up a larger proportion of the population that was depressed and cognitively impaired than these groups account for in the general population. Educational attainment was inversely related to having depression, cognitive impairment, or both. People with depression and cognitive impairment were more likely to live alone. People with depression or depression and cognitive impairment had high rates of fair or poor health. Both groups had a high rate of prescription medication use ($>75\%$ used ≥ 1 medications); respondents with depression had the highest rates, followed by those with depression and cognitive impairment. People with depression and cognitive impairment had the highest rates of Medicaid health insurance (which includes drug coverage) and the lowest net worth. Beneficiaries with depression, cognitive impairment, or both had higher rates of informal, formal, or any caregivers than those without either disorder.

Model-Based Analysis

Planned Enrollment

In unadjusted analyses (Table 2), compared with those who did not plan to enroll, beneficiaries with depression and cognitive impairment were 9.08 (95% confidence interval CI = 2.63–31.30) times as likely to say they did not know whether they would enroll and 5.94 (95% CI = 1.54–22.89) times as likely to enroll as those without both depression and cognitive impairment. Educated respondents and wealthier individuals were less likely to say they did not know whether they would enroll and less likely to plan to enroll than the least-educated respondents and those in the lowest net worth quartile, respectively.

In multivariable regression, compared with respondents who said they did not plan to enroll in Part D, beneficiaries with depression, cognitive impairment, or both were no more likely to say they did not know whether they planned to enroll or that they did plan to enroll than those without either disorder (Table 2).

Actual Enrollment

In unadjusted analyses, people with depression and cognitive impairment were 2.61 (95% CI = 1.62–4.20) times as likely to have signed up for Part D as those without either disorder (Table 3). Respondents who had depression only were also more likely to have signed up for Part D than those without either disorder (odds ratio = 1.34, 95% CI = 1.17–1.52), but those with cognitive impairment alone were no more likely to sign up for Part D than those without either disorder. Highly educated respondents and those with higher net worth were less likely to sign up than those with less education and those with low net worth, respectively. In the adjusted model, respondents with depression, cognitive impairment, or both were no more likely to have enrolled in Part D than respondents without either disorder.

Sensitivity Analysis

In both studies, in unadjusted analyses, people with depression, cognitive impairment, or both were more likely to have planned to or actually signed up for Part D, yet in partially or fully adjusted models, this effect disappeared. To ensure the validity of these findings (that depression, cognitive impairment, or both had no effect on planned or actual Part D enrollment), an in-depth sensitivity analysis was conducted using the full HRS sample. To summarize, the initial population included all people who were age eligible for and covered by Medicare in 2006 (denominator) who responded that they signed up for Medicare Part D in 2006 (numerator). The covariate was a four-part variable examining the presence of depression, cognitive impairment, or both.

Sensitivity analyses included examining depression alone and cognitive impairment alone rather than the combination of depression and cognitive impairment; excluding people with Medicaid coverage from the numerator and

Table 1. Characteristics of Health and Retirement Study Respondents in 2004 According to Depressive Symptoms and Cognitive Impairment Status[†]

Characteristic	n (%)				
	Total (N = 9,593)	No Depression or Cognitive Impairment (n = 7,985)	Depression Only (n = 1,216)	Cognitive Impairment Only (n = 274)	Depression and Cognitive Impairment (n = 118)
Age					
62–69	3,731 (35.4)	3,092 (35.5)	461 (33.6)	119 (38.2)	59 (44.6)
70–79	3,904 (42.8)	3,334 (43.6)	483 (42.4)	56 (22.3)	31 (28.6)
≥80	1,958 (21.8)	1,559 (20.9)	272 (24.0)	99 (39.3)	28 (26.8)
Sex					
Male	3,928 (41.1)	3,424 (42.9)	353 (30.4)	109 (39.0)	42 (34.9)
Female	5,665 (58.9)	4,561 (57.1)	863 (69.6)	165 (61.0)	76 (65.1)
Race					
Non-Hispanic white	7,540 (86.3)	6,481 (88.0)	861 (81.2)	145 (65.4)	53 (61.8)
Non-Hispanic black	1,185 (7.2)	872 (6.2)	192 (9.7)	82 (21.0)	39 (21.0)
Hispanic	703 (4.7)	489 (4.0)	149 (8.0)	42 (11.4)	23 (13.9)
Other	156 (1.8)	134 (1.9)	14 (1.0)	5 (2.2)	3 (3.3)
Education, years					
0–11	2,559 (24.2)	1,800 (20.7)	496 (37.3)	171 (57.1)	92 (72.7)
12	3,446 (36.6)	2,944 (37.2)	423 (36.0)	67 (26.9)	12 (13.4)
13–15	1,778 (19.0)	1,577 (20.0)	174 (15.3)	18 (8.4)	9 (9.0)
≥16	1,810 (20.2)	1,664 (22.1)	123 (11.4)	18 (7.6)	5 (5.0)
Living arrangement					
Married	5,767 (57.6)	5,028 (60.2)	553 (43.2)	137 (49.8)	49 (35.0)
Unmarried living with other	1,279 (13.4)	966 (12.3)	221 (17.8)	67 (21.7)	25 (22.8)
Unmarried living alone	2,547 (29.1)	1,991 (27.4)	442 (39.0)	70 (28.6)	44 (42.2)
Health					
Fair to poor	2,712 (26.7)	1,771 (21.1)	744 (58.8)	105 (35.1)	92 (73.7)
Any condition with prescription	7,290 (75.8)	5,897 (73.9)	1,074 (87.8)	219 (77.6)	100 (84.7)
Number of conditions with a prescription					
None	2,398 (25.3)	2,151 (27.0)	171 (14.9)	56 (22.7)	20 (17.3)
1	3,486 (37.1)	2,982 (38.1)	375 (30.6)	98 (36.0)	31 (32.4)
2	2,414 (24.5)	1,960 (23.9)	350 (28.8)	78 (26.9)	26 (19.1)
3–6	1,295 (13.1)	892 (11.0)	320 (25.7)	42 (14.4)	41 (31.2)
Insurance coverage for prescriptions					
Employer	3,385 (35.2)	2,972 (36.9)	324 (26.1)	69 (28.5)	20 (18.1)
Medicaid	748 (6.7)	444 (4.9)	196 (14.3)	62 (19.0)	46 (34.5)
Medicare health maintenance organization	1,088 (11.9)	946 (12.3)	122 (11.1)	18 (6.2)	2 (.8)
Purchase	2,165 (23.3)	1,781 (22.9)	302 (26.2)	59 (21.3)	22 (22.9)
None	2,207 (23.0)	1,842 (23.0)	272 (22.3)	66 (25.0)	28 (23.7)
Net worth, $ (according to quartile)					
≤52,000	2,374 (22.7)	1,643 (19.1)	505 (38.2)	138 (44.8)	88 (72.1)
52,001–158,000	2,400 (24.0)	1,983 (23.7)	324 (26.1)	70 (26.4)	23 (19.7)
158,001–395,000	2,421 (25.8)	2,165 (27.4)	217 (18.8)	34 (16.0)	5 (6.2)
> 395,000	2,398 (27.5)	2,194 (29.9)	170 (16.9)	32 (12.8)	2 (2.1)
Caregiving					
Informal caregiver	987 (10.1)	553 (6.9)	299 (24.1)	85 (34.1)	50 (43.3)
Formal caregiver	136 (1.5)	65 (.9)	51 (4.5)	8 (2.9)	12 (10.8)
Any caregiver*	1,049 (10.8)	583 (7.4)	325 (26.7)	88 (35.2)	53 (45.0)

* Informal or formal caregiver.
[†] All $P < .001$.

Table 2. Odds of Whether Respondents Planned to Sign Up for Medicare Part D Coverage (N = 3,567)

	Odds Ratio (95% Confidence Interval)			
	Unadjusted		Adjusted*	
Variable	Yes vs No	Don't Know vs No	Yes vs No	Don't Know vs No
Depression and cognitive impairment				
No depression or cognitive impairment	Reference	Reference	Reference	Reference
Depression only	1.47 (1.12–1.94)	1.75 (1.33–2.30)	1.04 (0.79–1.37)	1.20 (0.89–1.62)
Cognitive impairment only	2.76 (1.58–4.80)	2.53 (1.49–4.31)	1.55 (0.78–3.07)	1.28 (0.67–2.44)
Depression and cognitive impairment	5.94 (1.54–22.89)	9.08 (2.63–31.30)	2.09 (0.58–7.57)	3.11 (0.96–10.04)
Age				
62–69	Reference	Reference	Reference	Reference
70–79	0.75 (0.62–0.89)	0.81 (0.65–0.99)	0.57 (0.47–0.69)	0.69 (0.55–0.84)
≥80	0.96 (0.74–1.26)	1.31 (0.96–1.78)	0.64 (0.47–0.86)	0.99 (0.70–1.39)
Gender				
Male	Reference	Reference	Reference	Reference
Female	1.27 (1.03–1.55)	1.59 (1.35–1.87)	0.97 (0.77–1.22)	1.25 (1.03–1.51)
Race				
Non-Hispanic White	Reference	Reference	Reference	Reference
Non-Hispanic Black	2.82 (2.03–3.93)	2.94 (2.24–3.85)	1.93 (1.36–2.75)	1.85 (1.37–2.49)
Hispanic	3.44 (2.38–4.97)	2.09 (2.34–4.09)	2.38 (1.64–3.46)	1.73 (1.28–2.35)
Other	2.65 (1.03–6.78)	2.56 (1.07–6.16)	3.18 (1.24–8.14)	2.88 (1.14–7.30)
Education (years)				
0–11	Reference	Reference	Reference	Reference
12	0.54 (0.42–0.69)	0.52 (0.41–0.66)	0.78 (0.60–1.01)	0.73 (0.56–0.96)
13–15	0.53 (0.42–0.68)	0.51 (0.30–0.55)	0.93 (0.74–1.17)	0.66 (0.47–0.92)
≥16	0.39 (0.28–0.54)	0.25 (0.19–0.34)	0.79 (0.56–1.14)	0.46 (0.34–0.63)
Living arrangement				
Married	Reference	Reference	Reference	Reference
Unmarried living with other	1.72 (1.26–2.35)	1.96 (1.38–2.79)	1.13 (0.79–1.61)	1.18 (0.78–1.79)
Unmarried living alone	1.32 (1.09–1.60)	1.38 (1.12–1.70)	1.05 (0.82–1.33)	0.98 (0.77–1.24)
Health				
Fair to poor	1.57 (1.29–1.92)	1.81 (1.43–2.30)	0.95 (0.77–1.19)	1.10 (0.74–1.45)
Any condition with prescription	1.29 (1.08–1.54)	1.14 (.95–1.38)	0.51 (0.17–1.50)	0.73 (0.32–1.67)
Number of conditions with prescription				
None	Reference	Reference	Reference	Reference
1	1.22 (1.03–1.44)	0.98 (0.75–1.27)	2.55 (0.88–7.35)	1.35 (0.56–3.25)
2	1.31 (1.03–1.67)	1.38 (1.12–1.69)	2.57 (0.89–7.47)	1.68 (0.77–3.67)
3–6	1.90 (1.37–2.63)	1.41 (1.05–1.89)	3.47 (1.14–10.51)	1.44 (0.60–3.45)
Insurance coverage for prescriptions				
Employer	Reference	Reference	Reference	Reference
Medicaid	7.08 (4.93–10.18)	6.27 (4.04–9.74)	3.77 (2.25–6.34)	2.34 (1.37–4.00)
Medicare	1.56 (1.08–2.25)	1.06 (0.74–1.54)	1.61 (1.13–2.29)	0.96 (0.63–1.44)
Purchase	2.84 (2.07–3.89)	1.73 (1.31–2.28)	2.89 (2.03–4.12)	1.36 (0.99–1.85)
None	4.68 (3.64–6.01)	3.08 (2.38–3.99)	5.21 (4.00–6.78)	2.70 (2.08–3.50)
Net wealth, $				
≤52,000	Reference	Reference	Reference	Reference
52,001–158,000	0.60 (0.45–0.81)	0.49 (0.35–0.69)	0.87 (0.64–1.18)	0.70 (0.50–1.00)
158,001–395,000	0.40 (0.29–0.53)	0.32 (0.24–0.42)	0.66 (0.47–0.92)	0.54 (0.41–0.71)
>395,000	0.37 (0.27–0.51)	0.32 (0.24–0.43)	0.69 (0.50–0.95)	0.66 (0.47–0.93)
Caregiving†				
Informal caregiver	1.77 (1.26–2.49)	1.82 (1.30–2.56)	—	—
Formal caregiver	1.52 (0.66–3.53)	2.26 (1.08–4.72)	—	—
Any caregiver	1.75 (1.27–2.41)	1.85 (1.32–2.61)	1.16 (0.81–1.68)	1.08 (0.76–1.54)

* Adjusted analyses include all variables in the table.

† Because any caregiver consisted of informal or formal caregiver, only any caregiver was included in adjusted analyses.

Table 3. Odds of Whether Respondents Actually Signed Up for Medicare Part D Coverage (N = 9,593)

Variable	Odds Ratio (95% Confidence Interval)	
	Unadjusted	Adjusted*
Depression and cognitive impairment		
No depression or cognitive impairment	Reference	Reference
Depression only	1.34 (1.17–1.52)	0.93 (0.80–1.08)
Cognitive impairment only	1.24 (0.97–1.57)	0.90 (0.66–1.22)
Depression and cognitive impairment	2.61 (1.62–4.20)	1.33 (0.78–2.28)
Age		
62–71	Reference	Reference
72–81	1.00 (0.90–1.11)	0.77 (0.68–0.87)
≥82	1.02 (0.87–1.21)	0.69 (0.57–0.83)
Sex		
Male	Reference	Reference
Female	1.66 (1.51–1.83)	1.50 (1.34–1.68)
Race		
Non-Hispanic white	Reference	Reference
Non-Hispanic black	1.26 (1.05–1.51)	0.88 (0.71–1.08)
Hispanic	1.94 (1.55–2.44)	1.13 (0.90–1.43)
Other	1.49 (1.00–2.23)	1.52 (0.95–2.44)
Education, years		
0–11	Reference	Reference
12	0.66 (0.59–0.74)	0.83 (0.73–0.95)
13–15	0.62 (0.54–0.72)	0.88 (0.75–1.03)
≥16	0.54 (0.47–0.62)	0.95 (0.79–1.14)
Living arrangement		
Married	Reference	Reference
Unmarried living with other	1.31 (1.10–1.55)	0.76 (0.63–0.92)
Unmarried living alone	1.38 (1.21–1.57)	0.95 (0.83–1.09)
Health		
Fair to poor	1.56 (1.40–1.73)	1.20 (1.05–1.36)
Any condition with prescription	1.30 (1.14–1.50)	0.89 (0.52–1.53)
Number of conditions with prescription		
0	Reference	Reference
1	1.24 (1.06–1.44)	1.55 (0.87–2.76)
2	1.26 (1.07–1.48)	1.52 (0.85–2.72)
3–6	1.69 (1.38–2.06)	1.90 (1.06–3.40)
Insurance coverage for prescriptions		
Employer	Reference	Reference
Medicaid	11.76 (9.41–14.68)	9.89 (7.71–12.69)
Medicare	3.30 (2.67–4.07)	3.52 (2.84–4.36)
Purchase	3.34 (2.77–4.01)	3.44 (2.87–4.12)
None	6.59 (5.42–8.01)	7.16 (5.88–8.71)
Net worth, $ (according to quartile)		
≤52,000	Reference	Reference
52,001–158,000	0.58 (0.51–0.67)	0.82 (0.71–0.95)
158,001–395,000	0.52 (0.45–0.60)	0.86 (0.70–1.05)
>395,000	0.57 (0.51–0.63)	0.98 (0.82–1.17)
Caregiving†		
Informal caregiver	1.46 (1.26–1.69)	—
Formal caregiver	1.78 (1.15–2.73)	—
Any caregiver	1.48 (1.30–1.70)	0.99 (0.81–1.21)

* Adjusted analyses include all variables in the table.

† Because any caregiver consisted of informal or formal caregiver, only any caregiver was included in adjusted analyses.

denominator (because they were lower-income beneficiaries and were automatically enrolled in Part D); and changing the numerator and denominator to examine only beneficiaries who "took up" new coverage,[19] rather than examining all elderly Medicare beneficiaries. (Specifically, the denominator was people with private or no coverage in 2004, and the numerator was people with Medicare Part D, Medicaid, or Medicare health maintenance organization (HMO) coverage in 2006, because all three of these groups had Part D coverage.) None of these analyses changed the findings, thereby increasing confidence in the initial adjusted analyses, which found no difference in Part D coverage according to depression or cognitive impairment status.

DISCUSSION AND CONCLUSION

The creation of Medicare Part D could have caused confusion or challenges for beneficiaries with emotional or cognitive disorders. Despite concerns about beneficiaries falling through the cracks of the prescription medication coverage system, these beneficiaries were actually *more* likely (in unadjusted analyses) to plan to and sign up for Part D. Only 39.8% of beneficiaries without depression or cognitive impairment signed up for Part D, compared with 47.0% of beneficiaries with depression, 45.0% of beneficiaries with cognitive impairment, and 63.3% of beneficiaries with both disorders who signed up for Part D.

However, when examining Part D more closely, other sociodemographic and clinical characteristics can explain these initial findings suggesting that beneficiaries with cognitive or depressive impairments were more likely to enroll (Tables 2 and 3). People with depression, cognitive impairment, or both were sicker, used more medications, had lower net worth, and were more likely to have Medicaid health insurance coverage (and less likely to have employer coverage or Medicare HMO). These relatively disadvantaged individuals may have had greater incentives to obtain Part D coverage than healthier or richer counterparts with fewer medication needs.

Whether having a caregiver was associated with better insurance coverage was tested. It was hypothesized that people who had cognitive impairment or depressive illness were more likely to have an available caregiver who could help these beneficiaries sign up for Part D, but no difference was detected in coverage between those with and without a caregiver.

These findings illustrate that beneficiaries with depression and cognitive impairment were able to successfully gain Part D coverage to the same extent as beneficiaries without these disorders. These similar coverage rates may be in part due to successful outreach efforts and decreased barriers to enrollment by the Centers for Medicare and Medicaid Services. Furthermore, advocacy groups such as the American Association of Retired Persons and other agencies may have also been helpful at increasing awareness about Part D.[20] Although Part D coverage rates were not particularly high (41.1% overall, or 13.1 million older Americans), fewer than 10% of seniors lacked prescription coverage after Part D began in 2006, and some seniors made a decision not to seek coverage based on their lack of or low prescription drug utilization.[19]

However, these findings cannot assess how well beneficiaries with depression, cognitive impairment, or both fared once they had Part D coverage. Other studies have suggested that beneficiaries who were poorer and sicker continued to struggle with cost-related nonadherence to medication after Part D at a higher rate than healthier beneficiaries.[21] Future studies should assess the experiences of those with mental disorders and Part D coverage. Will these beneficiaries be more likely to reach the doughnut hole coverage gap (100% copayments after the first $2,250 in total drug costs in 2006)[22] sooner than beneficiaries without mental disorders? Will these beneficiaries have made worse decisions regarding their choice of a particular Part D plan in terms of higher costs or less coverage for expensive medications?[23] Or will these beneficiaries have similar experiences to other beneficiaries with chronic medical disorders but who do not necessarily have mental disorders?

Although this study provided consistent findings, there are some limitations. A small proportion of respondents had cognitive impairment or depression and cognitive impairment (representing only 3% and 1% of the sample, respectively), but there were still a substantial number of respondents in these groups (291 and 126, respectively), and these rates are probably low, because respondents who could not answer the questions on their own (e.g., they had proxy respondents rather than being self-respondents), and respondents in nursing homes were excluded. Prevalence rates of depressive symptoms found in this study (14%) are similar to those in other older populations (6–23% for minor depression and 4–20% for major depression).[24] The rates of cognitive impairment in this study (4%) are within close range of other estimates (4–8%), which may have included people with greater impairment than captured in these analyses.[25]

Second, clinical diagnoses of depression or dementia were not made but rather depressive symptoms and cognitive impairment. Proxies were used for these syndromes, and individuals who do not meet clinical criteria for depression or cognitive impairment may have been included. It is also not known to what extent these individuals were receiving any treatment for their depression or cognitive impairment.

Finally, it is possible that the time of year that the respondent completed the 2006 HRS survey may have influenced responses to whether a beneficiary signed up for Part D. There may have been more challenges earlier in the year regarding ease and rates of sign up.

Despite these limitations, the analyses suggest that Medicare beneficiaries with depression, cognitive impairment, or both were as likely as beneficiaries without these disorders to have obtained Medicare Part D coverage when it became available in 2006. Future research should examine the experiences of these beneficiaries to determine whether they have similar access to medications as their healthier counterparts.

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