Preventable Health Behaviors, COVID-19 Severity Perceptions, and Vaccine Uptake in Traditional Medicare and Medicare Advantage: a Survey-Based Study

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Unlike fee-for-service traditional Medicare (TM), Medicare Advantage (MA) plans are paid a fixed amount for each enrollee and therefore are incentivized to keep their enrollees healthy by prioritizing prevention and care management.[1] This suggests that MA plans may better respond to coronavirus disease 2019 (COVID-19)–related risks by providing information and education towards COVID-19 preventive practices. In this study, we examined whether there were differences in preventable health behaviors, perceptions of COVID-19 severity, and the likelihood of COVID-19 vaccine uptake (if available) between TM and MA enrollees.

METHODS

We used data from the Medicare Current Beneficiary Survey Fall 2020 COVID-19 Supplement, collected via phone interviews between October and November 2020.[2] We identified Medicare beneficiaries older than 65 years with full-year enrollment in TM or MA. This study used deidentified, publicly available data, and thus was considered not human subjects research.

We included three types of outcomes. The first included 16 measures of preventable health behaviors. Beneficiaries were asked to answer "yes" or "no" for each health behavior. The second included three measures of perceptions of COVID-19 severity. Beneficiaries were asked to rate the following statements using a 5-point scale: "Coronavirus is more contagious than the flu," "Coronavirus is more deadly than the flu," and "it is important for everyone to take precautions to prevent the spread of the Coronavirus, even if they are not in a high-risk group." We categorized responses into two levels: agreed versus not-agreed (neutral or disagreed). The last included the likelihood of COVID-19 vaccine uptake (if available), for which beneficiaries answered on a 5-point scale. We categorized answers into two levels: likely versus unlikely (including unsure). Our primary explanatory variable was MA enrollment.

Evidence suggests that MA enrollees tend to be healthier than TM enrollees, indicating that a direct comparison between TM and MA enrollees is potentially biased.[3] To address selective enrollment, we computed the inverse probability of treatment weighting (IPTW) as a propensity for enrolling in MA based on the variables described above.[4] To examine differences in the outcomes between TM and MA enrollees, we conducted logistic regression after controlling for demographic, socioeconomic, health status characteristics, the primary source of COVID-19 information, and the date of interview, and applied the IPTW. Then, we calculated the adjusted mean values of the outcomes for TM and MA enrollees while holding constant all other variables except the variable of interest. Next, we examined the difference in these adjusted outcomes among MA enrollees relative to TM enrollees.

RESULTS

We included 2541 TM enrollees and 1807 MA enrollees in 2020 (Table 1). Several differences existed in weighted sample characteristics between TM and MA enrollees, but they decreased after applying the IPTW.

Our IPTW-adjusted analyses showed no or marginal differences in preventable health behaviors, perceptions of COVID-19 severity, and the likelihood of COVID-19 vaccine uptake between TM and MA enrollees (Table 2). A statistically significant difference was observed only in three outcomes: compared to TM enrollees, MA enrollees had statistically significantly higher rates of wearing facemask (0.8 percentage point difference [95% CI: 0.1–1.4]), avoiding large groups of people (3.1 percentage point difference [95% CI: 1.6–4.7]), and agreeing that all should take COVID-19 precautions (1.2 percentage point difference [95% CI: 0.1–2.3]).

DISCUSSION

We found few differences in preventive responses to COVID-19-related risks between TM and MA enrollees. This aligns

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Table 1 Sample Characteristics Between TM and MA Enrollees

	N (%)		Weighted % without IPTW*		Weighted % with IPTW†	
	TM enrollees (*N*=2412)	MA enrollees (*N*=1545)	TM enrollees	MA enrollees	TM enrollees	MA enrollees
Covariates						
Age						
65–74 years	1216 (47.9)	835 (46.2)	66.2	60.9	64.1	64.2
75+ years	1325 (52.1)	972 (53.8)	33.8	39.1	35.9	35.8
Female	1418 (55.8)	1054 (58.3)	56.3	58.4	56.9	57.1
Race/ethnicity						
Non-Hispanic white	2154 (84.8)	1334 (73.8)	82.7	74.5	80.1	79.5
Hispanic	142 (5.6)	181 (10.0)	7.1	10.3	7.8	8.7
Non-Hispanic black	127 (5.0)	208 (11.5)	4.8	9.8	6.3	6.7
Other	118 (4.6)	84 (4.6)	5.4	5.4	5.8	5.0
Income						
$25,000 or more	496 (19.5)	629 (34.8)	16.1	32.0	21.7	21.5
Less than $25,000	2045 (80.5)	1178 (65.2)	83.9	68.0	78.3	78.5
Dual eligibility for Medicare and Medicaid	129 (5.1)	262 (14.5)	3.9	12.6	7.1	7.0
Residence of urban areas	1884 (74.1)	1534 (84.9)	78.5	87.5	81.5	80.2
US census regions						
Northeast	482 (19.0)	326 (18.0)	19.0	17.4	18.6	18.1
Midwest	618 (24.3)	432 (23.9)	22.8	22.9	21.9	25.8
South	938 (36.9)	615 (34.0)	37.3	34.1	37.9	33.2
West	503 (19.8)	434 (24.0)	20.9	25.6	21.6	22.9
Use of other language at home other than English	165 (6.5)	239 (13.2)	6.6	12.8	8.8	8.7
Having a particular place for medical care	2348 (92.4)	1666 (92.2)	91.9	92.0	91.9	91.7
Primary sources of COVID-19 information						
Traditional news sources‡	1371 (54.0)	993 (55.0)	50.6	53.7	51.7	52.3
Comments/guidance from government officials	31 (1.2)	23 (1.3)	1.4	1.2	1.3	1.3
Social media	257 (10.1)	146 (8.1)	11.0	9.4	10.5	10.5
Other webpages/internet	177 (7.0)	102 (5.6)	8.9	6.8	8.1	8.0
Friends or family members	178 (7.0)	156 (8.6)	5.9	7.8	6.8	6.8
Health care providers	527 (20.7)	387 (21.4)	22.2	21.2	21.6	21.2
Self-reported health conditions						
Hypertension	1681 (66.2)	1231 (68.1)	62.3	65.7	63.5	63.4
Myocardial infarction	236 (9.3)	196 (10.8)	7.7	10.3	8.6	8.5
Congestive heart failure	153 (6.0)	109 (6.0)	4.8	5.5	5.1	5.5
Stroke	219 (8.6)	150 (8.3)	7.6	8.2	7.9	7.8
High cholesterol	1756 (69.1)	1269 (70.2)	67.1	68.4	67.2	66.8
Cancer	577 (22.7)	401 (22.2)	20.8	20.9	20.9	20.9
Alzheimer's disease/dementia	32 (1.3)	32 (1.8)	1.0	1.3	1.0	1.1
Depression	498 (19.6)	402 (22.2)	20.9	22.5	21.4	21.7
Osteoporosis	519 (20.4)	395 (21.9)	20.1	21.6	20.6	20.8
Broken hip	86 (3.4)	60 (3.3)	2.6	3.0	2.8	2.8
Emphysema/asthma/COPD	467 (18.4)	311 (17.2)	17.7	17.4	17.6	17.9
Diabetes	802 (31.6)	624 (34.5)	31.6	34.7	32.6	33.0
Weak immune system	407 (16.0)	280 (15.5)	16.9	15.5	16.4	16.8
Smoking status						
Current smoker	201 (7.9)	153 (8.5)	9.5	8.9	9.2	9.0
Former smoker	1314 (51.7)	843 (46.7)	49.0	45.1	48.1	48.5
Never smoked	1026 (40.4)	811 (44.9)	41.5	46.0	42.7	42.5
Interview date						
Week of October 4, 2020	508 (20.0)	349 (19.3)	20.2	18.5	19.5	19.8
Week of October 11, 2020	663 (26.1)	467 (25.8)	25.2	25.9	25.5	25.3
Week of October 18, 2020	472 (18.6)	351 (19.4)	20.5	19.6	19.9	19.7
Week of October 25, 2020	421 (16.6)	292 (16.2)	15.8	16.6	16.4	16.2
Week of November 1, 2020	310 (12.2)	233 (12.9)	11.9	12.9	12.4	12.6
November 8 to 15, 2020	167 (6.6)	115 (6.4)	6.4	6.5	6.4	6.5
Outcomes						
Preventable health behaviors						
Wash hands	2466 (97.0)	1751 (96.9)	97.1	97.0	97.0	97.1
Use sanitizer	2372 (93.3)	1682 (93.1)	93.6	93.9	93.6	94.3
Avoid touching face	1849 (72.8)	1301 (72.0)	75.5	73.6	75.3	73.5
Cough or sneeze into a tissue	2169 (85.4)	1526 (84.4)	86.2	86.2	85.5	87.2
Wore facemask	2508 (98.7)	1790 (99.1)	98.6	99.4	98.6	99.4
Cleaned common areas	1871 (73.6)	1363 (75.4)	74.8	77.2	75.5	76.6
Avoid contact with sick people	2430 (95.6)	1743 (96.5)	96.1	96.9	96.1	96.9
Kept 6 feet distance	2400 (94.5)	1709 (94.6)	94.7	94.9	94.8	95.1
Avoid large groups of people	2374 (93.4)	1729 (95.7)	93.0	96.1	93.1	96.3

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Table 1. (continued)

	N (%)		Weighted % without IPTW*		Weighted % with IPTW†	
	TM enrollees (*N*=2412)	MA enrollees (*N*=1545)	TM enrollees	MA enrollees	TM enrollees	MA enrollees
Shelter in place	1924 (75.7)	1416 (78.4)	73.3	76.5	74.7	74.8
Buy extra food	935 (36.8)	662 (36.6)	38.1	37.8	38.3	37.4
Buy extra cleaning supplies	1468 (57.8)	1043 (57.7)	59.4	59.8	59.3	59.2
Buy extra medicines	153 (6.0)	139 (7.7)	6.7	7.5	6.7	6.7
Consult with medical provider	520 (20.5)	404 (22.4)	21.3	22.7	21.5	22.0
Avoid other people	2230 (87.8)	1610 (89.1)	87.4	89.0	87.8	88.8
Perceptions of COVID-19 severity§						
Agree that COVID-19 is more contagious than flu	2200 (86.6)	1603 (88.7)	86.2	88.7	86.5	88.0
Agree that COVID-19 is more deadly than flu	2185 (86.0)	1586 (87.8)	85.3	87.7	85.7	86.4
Agree that all should take COVID-19 precautions	2482 (97.7)	1779 (98.5)	97.3	98.5	97.3	98.4
Vaccine uptake						
Would get a COVID-19 vaccine if available‖	1656 (65.2)	1121 (62.0)	64.0	61.5	63.4	62.6

TM, traditional Medicare; MA, Medicare Advantage; IPTW, inverse probability of treatment weighting; COVID-19, coronavirus disease 2019; COPD, chronic obstructive pulmonary disease

**We used sampling weights provided by the Medicare Current Beneficiary Survey data*

†To account for differences in characteristics between TM and MA enrollees attributable to selection bias, we computed the IPTW as a propensity for enrolling in MA based on enrollee demographic, socioeconomic, health status variables, as well as the primary source of COVID-19 information and the date of interview

‡Includes television, radio, websites, and/or newspapers

§Beneficiaries were asked to rate the following statements using a 5-point scale: "Coronavirus is more contagious than the flu," "Coronavirus is more deadly than the flu," and "it is important for everyone to take precautions to prevent the spread of the Coronavirus, even if they are not in a high-risk group." We categorized into two levels: agreed (strongly agree or agree) or not (neither agree nor disagree, disagree, or strongly disagree)

‖Beneficiaries were asked to rate their answers on a 5-point scale, which we categorized into two levels: yes (definitely or probably) or no (not sure, probably not, or definitely not)

Table 2 Differences in Preventable Health Behaviors, Perceptions of COVID-19 Severity, and Likelihood of Getting a COVID-19 Vaccine if Available Between TM and MA Enrollees

Outcome	Adjusted rates, % (95% CI) *		
	TM enrollees	MA enrollees	Differences among MA enrollees relative to TM enrollees
Preventable health behaviors			
Wash hands	97.0 (96.2 to 97.7)	97.1 (96.2 to 97.9)	0.1 (−1.0 to 1.3)
Use sanitizer	93.7 (92.6 to 94.7)	94.2 (93.1 to 95.4)	0.6 (−1.0 to 2.2)
Avoid touching face	75.3 (73.5 to 77.2)	73.5 (71.2 to 75.9)	−1.8 (−4.8 to 1.2)
Cough or sneeze into a tissue	85.5 (83.8 to 87.1)	87.3 (85.6 to 89.0)	1.8 (−0.6 to 4.1)
Wore facemask	98.6 (98.0 to 99.1)	99.3 (98.9 to 99.7)	0.8 (0.1 to 1.4)
Cleaned common areas	75.5 (73.6 to 77.3)	76.6 (74.4 to 78.8)	1.2 (−1.7 to 4.0)
Avoid contact with sick people	96.0 (95.2 to 96.9)	96.9 (96.0 to 97.8)	0.9 (−0.4 to 2.1)
Kept 6 feet distance	94.8 (93.8 to 95.8)	95.0 (93.9 to 96.2)	0.2 (−1.3 to 1.7)
Avoid large groups of people	93.1 (91.9 to 94.3)	96.3 (95.3 to 97.2)	3.1 (1.6 to 4.7)
Shelter in place	74.7 (72.7 to 76.6)	74.8 (72.4 to 77.1)	0.1 (−2.9 to 3.2)
Buy extra food	38.3 (36.1 to 40.6)	37.4 (34.8 to 39.9)	−1.0 (−4.4 to 2.4)
Buy extra cleaning supplies	59.4 (57.2 to 61.6)	59.1 (56.5 to 61.8)	−0.3 (−3.7 to 3.2)
Buy extra medicines	6.8 (5.5 to 8.0)	6.7 (5.5 to 7.9)	−0.1 (−1.8 to 1.7)
Consult with medical provider	21.5 (19.6 to 23.4)	22.0 (19.8 to 24.2)	0.5 (−2.4 to 3.4)
Avoid other people	87.9 (86.4 to 89.4)	88.7 (87.0 to 90.4)	0.8 (−1.5 to 3.1)
Perceptions of COVID-19 severity†			
Agree that COVID-19 is more contagious than flu	86.6 (85.0 to 88.2)	88.0 (86.2 to 89.7)	1.4 (−1.0 to 3.7)
Agree that COVID-19 is more deadly than flu	85.7 (84.1 to 87.4)	86.4 (84.5 to 88.3)	0.6 (−1.9 to 3.1)
Agree that all should take COVID-19 precautions	97.2 (96.4 to 98.1)	98.4 (97.8 to 99.1)	1.2 (0.1 to 2.3)
Vaccine uptake			
Would get a COVID-19 vaccine if available‡	63.3 (61.1 to 65.5)	62.7 (60.1 to 65.3)	−0.7 (−4.1 to 2.8)

TM, traditional Medicare; MA, Medicare Advantage; IPTW, inverse probability of treatment weighting; COVID-19, coronavirus disease 2019

**To account for differences in characteristics between TM and MA enrollees attributable to selection bias, we computed the IPTW as a propensity for enrolling in MA based on enrollee demographic, socioeconomic, and health status variables as well as the primary source of COVID-19 information and the date of interview. Next, we estimated the mean adjusted values of the outcomes for TM and MA enrollees. We examined the difference in these adjusted mean outcomes among MA enrollees relative to TM enrollees*

‡Beneficiaries were asked to rate the following statements using a 5-point scale: "Coronavirus is more contagious than the flu," "Coronavirus is more deadly than the flu," and "it is important for everyone to take precautions to prevent the spread of the Coronavirus, even if they are not in a high-risk group." We categorized into two levels: agreed (strongly agree or agree) or not (neither agree nor disagree, disagree, or strongly disagree)

‡Beneficiaries were asked to rate their answers on a 5-point scale, which we categorized into two levels: yes (definitely or probably) or no (not sure, probably not, or definitely not)

with prior research that found that MA enrollees did not necessarily have higher primary care utilization than TM enrollees.[5] There may be several explanations for our finding. First, current policies have mainly focused on COVID-19 testing and treatment. Thus, MA plans may not necessarily provide information campaigns aimed at reducing the risk of contracting COVID-19 compared to TM. Second, Medicare beneficiaries may have already had sufficient knowledge about COVID-19 through news media. As shown in our study, the majority reported their primary sources of COVID-19 information as traditional news sources, possibly leading to less reliance on information campaigns provided by their plans. The findings should be interpreted within several limitations. First, we could not adjust for unobserved differences in TM and MA enrollees. Second, we relied on relatively small samples. Third, we applied sample weights to produce population estimates, but this may not universally reflect experiences of Medicare beneficiaries.

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Declarations:

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

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