Understanding the Socioeconomic and Geographical Characteristics of Beneficiaries Receiving a Comprehensive Medication Review

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ABSTRACT

BACKGROUND: Medicare Part D sponsors are required to offer medication therapy management (MTM) programs to eligible beneficiaries. Recent studies have demonstrated that there have been racial/ethnic disparities in MTM eligibility criteria. For example, compared with non-Hispanic White beneficiaries, Hispanic and non-Hispanic Black beneficiaries are less likely to be eligible for MTM. However, there is limited evidence for socioeconomic and geographical characteristics of those who are eligible and receive MTM services.

OBJECTIVE: To describe the demographic, socioeconomic, and geographic characteristics of Medicare beneficiaries who received MTM services.

METHODS: As part of a previous study, a national survey evaluated a convenience sample of perspectives of Medicare beneficiaries on the MTM standardized format. The survey was distributed through Medicare Part D plans to beneficiaries receiving MTM services from 2017-2018. As part of the survey, respondents could provide their ZIP codes. Geographical variables, such as the National Center for Health Statistics (NCHS) urban-rural classification scheme and economic research service (ERS) county typology codes, were then applied to respondents' ZIP codes, allowing for the classification of counties or census tracts by urbanization and economic dependence measures. Descriptive statistics are reported for demographic, geographical, and socioeconomic information.

RESULTS: Of the 300 (of 434) respondents who provided their ZIP codes, 51.3% were aged 65-74 years; 50% were male; and 66.7% had at least a college education. There were 82.7% who self-identified as White, while only 8% self-identified as Hispanic or Black/African American. The majority of respondents (58.4%) lived in large metropolitan areas as defined by the NCHS urban-rural classification scheme. Respondents' counties were characterized by economic dependence with 14.0% of respondents living in federal/state government-dependent counties and 12.7% living in recreation-dependent counties.

CONCLUSIONS: The majority of respondents who provided their ZIP codes identified themselves as White and lived in large metropolitan areas. Respondents who identified themselves as Hispanic or Black/African American were not well represented. This study provides geographical and socioeconomic characteristics of Medicare beneficiaries who received MTM services and highlights racial/ethnic differences. Further work is needed to confirm geographical and socioeconomic disparities among beneficiaries who received MTM services.

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What is already known about this subject

- Racial/ethnic inequities have been noted in medication therapy management (MTM) program eligibility.
- It is unclear if there are also racial/ethnic disparities in those who receive MTM program services.

What this study adds

- This study describes geographical and socioeconomic characteristics of Medicare beneficiaries who received MTM program services.
- The majority of beneficiaries within the study population were White and lived in large metropolitan areas, while respondents who were Hispanic or Black/African American were not well represented.

The passage of the Medicare Modernization Act (MMA) in 2003 created a mechanism to provide coverage for pharmaceuticals and medication therapy management (MTM) services to Medicare beneficiaries. Under the MMA, each Medicare Part D sponsor is required to offer eligible Medicare beneficiaries an MTM program.^{1,2} Since part of the MTM program requirements stipulated by later regulation (§423.153[d]), a Part D sponsor must offer an annual comprehensive medication review (CMR) between the beneficiary and a qualified MTM provider where medications are reviewed, drug therapy problems are identified, and a plan for resolution is developed.^{1,2}

Beneficiaries are eligible for MTM services if they have multiple chronic diseases, take multiple Part D medications, and are likely to exceed an annual predetermined cost threshold for covered Part D medications.²⁻⁴ Although the Centers for Medicaid & Medicare Services strives to increase enrollment for MTM programs, there have been racial/ethnic inequities noted in MTM eligibility.⁵ For instance, using 2004-2005 data from the Medicare Current Beneficiaries Survey, Wang et al. (2014) conducted a retrospective analysis to examine if racial/ethnic disparities in health status, health services utilizations/costs, and medication use patterns differed between MTM-ineligible beneficiaries and MTM-eligible beneficiaries.⁵ These investigators found that there were larger racial/ethnic

disparities in self-reported good health status among MTM ineligible beneficiaries compared with MTM eligible beneficiaries. Moreover, because the MTM eligibility criteria are based primarily on prescription drug cost and medication use, racial/ethnic minorities may be disproportionately affected because minorities historically use fewer prescription drugs and spend less money on medications compared with Whites.⁶

To date, it is unclear if the observed racial/ethnic disparities in MTM eligibility are seen in those who actually receive MTM services because socioeconomic and geographical characteristics of those who received MTM services are not readily available. The objective of this study was to describe the demographic and geographic characteristics of a convenience sample of Medicare beneficiaries who received MTM services.

Methods

A previous study performed by several of the authors of this article assessed the perspectives of Medicare beneficiaries on the utility of the Medication Therapy Management (MTM) Standardized Format (SF).⁷ A link to an electronic survey was distributed nationally by Medicare Part D plans that had partnered with the research team through the AMCP MTM Advisory Group. The plans distributed the survey link electronically to a sample of beneficiaries who received MTM services from 2017-2018. Additional details of the survey design and dissemination can be found in the corresponding publication.⁷

As part of the survey, respondents could provide demographic information, including age, gender, race/ethnicity, ZIP code, and education. They could also provide other information such as self-health rating and number of medications. Respondents' geographic states were identified from the respondents' ZIP codes and then categorized into geographic regions according to the U.S. Census Bureau.⁸ Codes and classification schemes were then applied to the respondents' ZIP codes, allowing for the classification of counties or census tracts by urbanization and economic dependence measures. These geography-based variables include the National Center for Health Statistics (NCHS) urban-rural classification scheme and economic research service (ERS) county typology codes (see the [Supplementary Appendix](#) for a more detailed description of the NCHS and ERS geography-based variables, available in online article).

The NCHS urban-rural classification scheme is a 6-level classification scheme for counties within the United States that allows for the NCHS to study associations between urbanization level and health.⁹ The categories range from the most urban category of large metropolitan areas to the most rural category that includes nonmetropolitan "noncore" counties. Nonmetropolitan "noncore" counties are defined as counties that are not designated as core-based statistical areas, which include metropolitan and micropolitan statistical areas.⁹

TABLE 1 Demographics and Health Status of Survey Respondents (N = 300)

Baseline Characteristics	N (%)
Age, years	
<65	43 (14.3)
65-74	154 (51.3)
75-84	88 (29.3)
≥85	13 (4.3)
Prefer not to say	1 (0.3)
Did not respond	1 (0.3)
Gender	
Female	147 (49.0)
Male	150 (50.0)
Did not respond	3 (1.0)
Race/ethnicity	
Black/African American	12 (4.0)
White	248 (82.7)
Hispanic or Latino	12 (4.0)
Asian	10 (3.3)
Prefer not to say	12 (4.0)
Other	1 (0.3)
Did not respond	5 (1.7)
Education	
Primary school	2 (0.7)
Some high school, but no diploma	5 (1.7)
High school diploma (or GED)	82 (27.3)
College or higher	200 (66.7)
Prefer not to say	8 (2.7)
Did not respond	3 (1.0)
Self-health rating	
Poor	15 (5.0)
Fair	94 (31.3)
Good	141 (47.0)
Very good	41 (13.7)
Excellent	8 (2.7)
Did not respond	1 (0.3)
Number of medications	
0-4	15 (5.0)
5-9	82 (27.3)
10-14	100 (33.3)
15-19	42 (14.0)
20+	22 (7.3)
Did not respond	39 (13.0)
CMR setting	
In person	26 (8.7)
Over the phone	263 (87.7)
Do not recall	9 (3.0)
Did not respond	2 (0.7)

CMR = comprehensive medication review; GED = general equivalency diploma.

On the other hand, ERS typology codes classify U.S. counties according to 6 mutually exclusive categories of economic dependence and 6 overlapping categories of policy-relevant themes.¹⁰ Economic dependence types include mining, manufacturing, federal/state government, recreation, and

TABLE 2 Geographical and Socioeconomic Characteristics of Survey Respondents (N = 300)

Characteristics	N (%)
Geographic region	
Northeast	35 (11.7)
Midwest	59 (19.7)
South	92 (30.6)
West	114 (38.0)
NCHS urban-rural classification scheme for counties (2013)	
Large central metro	104 (34.7)
Large fringe metro	71 (23.7)
Medium metro	68 (22.7)
Small metro	27 (9.0)
Micropolitan	21 (7.0)
Non-core	9 (3.0)
Economic dependence county indicator	
Nonspecialized	181 (60.3)
Mining	4 (1.3)
Manufacturing	35 (11.7)
Federal/state government	42 (14.0)
Recreation	38 (12.7)
Low employment county indicator	
No	279 (93.0)
Yes	21 (7.0)
Population loss county indicator	
No	266 (88.7)
Yes	34 (11.3)
Retirement destination county indicator	
No	248 (82.7)
Yes	52 (17.3)
Classification of counties by level of poverty over 3 decades	
All other counties	295 (98.3)
Persistent poverty county	5 (1.7)

NCHS = National Center for Health Statistics.

nonspecialized counties. The policy-relevant types include low employment, persistent poverty, population loss, and retirement destination.

Descriptive statistics were reported for demographic, geographical, and socioeconomic information. SPSS software, version 26, was used for all statistical analyses (IBM, Armonk, NY). The protocol for this study was reviewed and approved under exempt status by the University of Maryland Baltimore Institutional Review Board.

Results

There were 434 unique surveys that were received from the previous study.⁷ The survey response was 4.3%. Of the 434 unique respondents, 300 provided their ZIP codes.

Demographic Information

Among respondents providing their ZIP codes, 51.3% were aged 65-74 years; 50% were male; and 66.7% had at least a college education. There were 82.7% who identified themselves as White, while only 8% self-identified as Hispanic or Black/African American. A sizeable portion of the respondents rated their health as either fair (31.3%) or good (47%). The vast majority (81.9%) of the respondents were taking at least 5 medications, and 54.6% were taking at least 10 medications. In addition, most respondents received their CMRs over the phone (87.7%; Table 1).

Geographical Characteristics

The majority of respondents (58.4%) lived in large metropolitan areas (large central metro and large fringe metro) as defined by the NCHS urban-rural classification scheme (Table 2). These metropolitan areas are defined by the NCHS as counties in metropolitan service areas having a population of at least 1 million.⁹ Respondents' counties were also classified by ERS county typology codes based on economic dependence. While most respondents' counties were nonspecialized (60.3%), 14% of respondents lived in federal/state government-dependent counties, and 12.7% lived in recreation-dependent counties. Finally, respondents' counties were also classified by ERS county typology codes by county policy types. Most of the respondents' counties were not determined to be low employment counties (93%), population loss counties (88.7%), or persistent poverty counties (98.3%). However, 17.3% of respondents' counties were classified as retirement destination counties.

Discussion

Racial/ethnic disparities remain an ongoing challenge within the U.S. health care system. Individuals of color still face significant disparities in access, coverage, and utilization of care, as well as health status and outcomes.¹¹ Among Medicare beneficiaries, compared with White beneficiaries, Black and Hispanic beneficiaries are more likely to have limited financial resources, report poorer health status, and have a more difficult time getting needed care.¹² What is not as well known, is whether racial/ethnic disparities exist in those who actually receive MTM services, given that MTM is an optional service offered to all Medicare beneficiaries. The findings from this study help to fill this knowledge gap and describe socioeconomic characteristics of Medicare beneficiaries who received MTM services. The study population was fairly homogeneous as most respondents were White, lived in large metropolitan areas, and in counties that were affluent. The study population had a low representation of Hispanic and Black/African American beneficiaries, which is consistent with the racial/ethnic disparities noted throughout the literature.¹³⁻¹⁵

Interestingly, a recent study by Coe et al. (2019) noted that Black older adults were more likely to receive a CMR compared with White, Asian, Native American, Indian, and Hispanic older adults.¹⁶ The study also showed that a higher proportion of Black and Hispanic older adults were likely to be enrolled in MTM. Unlike our study, the study population for Coe et al. included Medicare beneficiaries who were eligible for, offered, and received CMRs in 2013 and 2014. Our study population comprised Medicare beneficiaries who received CMRs and then responded to an electronic survey regarding the CMR. While this distribution method was efficient, it likely resulted in a lower representation of those populations with decreased access to computers and email. For instance, according to a Pew Research Center report conducted in 2015, 97% of individuals who live in households with an annual income of \$75,000 or more report that they are internet users.¹⁷ On the other hand, 74% of individuals who live in households with an annual income of \$30,000 or less report that they are internet users. The Pew Research Center report also estimated that 85% of White individuals use the internet, compared with 81% for Hispanic and 78% for Black, non-Hispanic individuals. As a result, the distribution method could have accounted for the difference in results between the studies.

Studies have demonstrated the benefit of MTM services. Positive health outcomes for those receiving MTM services include a decrease in inpatient visits, lower admission rates, lower rates of emergency department visits, reduction in total health care costs, and higher medication adherence.¹⁸⁻²¹ Moreover, as shown by the IMPACT study, MTM services in underserved communities have resulted in significant improvement in clinical markers associated with diabetes mellitus, such as glycated hemoglobin A1c, low-density lipoprotein, and triglyceride concentrations.²² The improvement in clinical outcomes was attributed to a multipronged implementation strategy that included addressing social determinants of health (e.g., providing grocery store gift cards, transportation passes, and free testing supplies); providing individualized diabetes education and therapeutic recommendations; and patient-centered collaboration among the interprofessional health care team.²² Thus, such implementation strategies and perhaps others are likely important for MTM services to improve patient outcomes in minority populations.

Given the benefits of MTM, it is therefore concerning that there may be racial/ethnic disparities in beneficiaries receiving MTM services. The MTM eligibility criteria may perpetuate racial/ethnic disparities in access to health care services.^{5,6,23} In addition, sociocultural differences between patients and health care professionals can result in a lack of understanding between the 2 parties.¹³ If these differences are not fully accepted or embraced, cultural or linguistic barriers arising from the health care system may result in a negative effect on communication and trust, encouraging certain racial/ethnic groups to decline

health care services.¹³ As such, because beneficiaries can freely opt-out of MTM programs, beneficiaries encountering cultural or linguistic barriers may decline MTM programs because of dissatisfaction with their health care or distrust with their health care providers.¹³

On the other hand, MTM program enrollment differences, or low enrollment in general, could be due to lack of perceived benefit or need for MTM services by eligible Medicare beneficiaries.^{24,25} For example, when Doucette et al. (2007) surveyed Medicare beneficiaries on their perceptions of pharmacist-provided counseling and MTM services, the beneficiaries had a more favorable attitude toward counseling activities compared with MTM services.²⁴ The authors attributed this finding to the novelty of MTM services at the time of the study. However, a decade after the findings of Doucette et al. were published, Medicare beneficiaries are still generally unaware of MTM activities. A recent study done by Taylor et al. (2018) demonstrated that Medicare beneficiaries were generally unaware of MTM program activities, as well as the benefits of MTM programs.²⁶

More work remains to confirm if there are racial/ethnic disparities in beneficiaries receiving MTM services, potentially using other data sources such as Medicare Part D claims data. In addition, MTM program CMR completion rate for Medicare Advantage Prescription Drug (MAPD) plans has steadily increased from 30.9% in 2016, 45.6% in 2017, and 77% in 2019.^{27,28} Similarly, although standalone prescription drug plans' (PDPs) CMR completion rate is generally lower than that of MAPDs, CMR completion rates also increased from 15.4% in 2016, 25.3% in 2017, and 44% in 2019.^{27,28} While CMR rates have increased, future MTM program designers need to further understand how to better align MTM programs to the needs of minorities and communities.³

Limitations

This study has some limitations to consider. While this study represents a step toward better understanding the socioeconomic characteristics of Medicare beneficiaries who received MTM services, the study population was a convenience sample. As such, the study population was not representative of Medicare beneficiaries nationwide, and the results were not generalizable. Moreover, the survey distribution method might have reduced participation among groups of beneficiaries, especially those with limited financial resources or belonging to certain racial/ethnic groups. However, the demographic information collected in the survey was reflective of the greater Medicare beneficiary population.⁷ According to the Medicare Payment Advisory Committee report, 74% of the beneficiaries were White, compared with 82.7% of our respondents who identified themselves as White.²⁹ Additionally, the majority of respondents lived in large metropolitan areas as defined by the NCHS urban-rural classification scheme, which is generally

similar to the distribution of the U.S. population based on 2013 Centers for Prevention and Disease Control data.³⁰

Although selection bias is a concern with the study population, this study took an important step toward identifying possible disparities between beneficiaries receiving MTM services. This study, in combination with future studies that use nationally representative datasets can help better depict who is receiving MTM services but, more importantly, who is not receiving MTM services.

Conclusions

The majority of respondents who provided their ZIP codes identified themselves as White and lived in large metropolitan areas. Respondents who identified themselves as Hispanic or Black/African American were not well represented. This study provides a convenience sample of geographical and socioeconomic characteristics of Medicare beneficiaries who received MTM services and highlights racial/ethnic differences. Further work is needed to confirm geographical and socioeconomic disparities among beneficiaries who receive MTM services.

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DISCLOSURES

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