

Article

Association between Priority Conditions and Access to Care, Treatment of an Ongoing Condition, and Ability to Obtain Prescription Medications among Medicare Beneficiaries during the COVID-19 Pandemic

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Abstract: Several comorbid conditions have been observed to be associated with an increased risk of poor outcomes following a diagnosis of COVID-19. The purpose of this investigation was to assess associations between Centers for Medicare and Medicaid Services (CMS) designated priority conditions and an inability to access care, treat ongoing conditions, and obtain prescription medications among Medicare beneficiaries in the United States during the COVID-19 pandemic. Nationally representative CMS Medicare Current Beneficiary Survey (MCBS) COVID-19 Supplement Public Use Files (PUF) were analyzed via bivariable, binomial generalized linear models across three time periods: (1) Summer 2020; (2) Fall 2020; and (3) Winter 2021. Across an estimated 55.3–57.4 million Medicare beneficiaries, approximately one-fifth reported an inability to access at least one type of care at the onset of the pandemic. Significantly worse odds of an ability to get care across various time periods was observed among several priority conditions including immune disorders, cancer, depression, osteoporosis, diabetes, arthritis, and numerous cardiovascular and pulmonary conditions. Among those reporting an inability to access care, approximately one-third involved treatment of an ongoing condition, and under one-tenth involved prescription medications. To identify modifiable risk factors and to develop active interventions, future work should continue to assess the complex associations between outcomes, access to care, comorbidities, evolving healthcare infrastructures, computerization, and various public health initiatives.

Keywords: COVID-19; access to care; comorbid conditions; chronic conditions; prescription medication; Medicare; MCBS



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1. Introduction

Concerns surrounding the provision of and access to health care have accompanied the SARS-CoV-2 virus (COVID-19) pandemic, particularly among vulnerable populations [1,2]. Access to care has been a focus of research prior to the pandemic, with reported rates of unmet needs (i.e., unable to access care when needed) among older persons in the United States increasing significantly from 2001–2010 compared to 2011–2019 [3]. Concerns regarding access to prescription medication have also been noted before the pandemic [4]. Real-world evidence has suggested an association with a self-reported inability to access care and several demographic, clinical, and health-resource factors during the pandemic in the United States' Medicare population [2,5–9].

Delays in care during the pandemic accompanied by poor outcomes have been observed in complex medical conditions. During the first nine months of COVID-19, research has reported that Medicare beneficiaries with severe mental disorders (i.e., schizophrenia, schizophrenia-related disorders, and bipolar type I) received fewer antipsychotic/mood-stabilizer medications and barriers to acute care treatment within emergency departments and hospitals [9]. Across some 103 studies, approximately 89 percent noted decreases

in inpatient admissions during the pandemic relating to cardiometabolic conditions (i.e., acute coronary syndrome [ACS], ischemic stroke, and heart failure), with overall declines spanning from 20.2 to 73.0 percent [10]. Additionally, a meta-analysis of 96 investigations reported delays following the onset of COVID-19 with delayed admissions of ACS patients, higher rates of vasospasm associated with aneurysmal subarachnoid hemorrhage, increased perforation rates in acute appendicitis, and greater diabetic ketoacidosis rates among type 1 diabetes patients [11]. Overall, several comorbid conditions have been observed to have an increased risk of poor outcomes with a diagnosis of COVID-19 [12]. Specifically among Medicare beneficiaries, Greenwald et al. (2022) reported that the strongest individual predictor of mortality following a COVID-19 diagnosis was an integrated measure of comorbidities in both community and long-term care settings [12].

Given the aforementioned, the overall purpose of this investigation was to assess self-reports of an inability to access care, treat ongoing conditions, and obtain prescription medications among Medicare beneficiaries in the United States during the COVID-19 pandemic. More specifically, the objectives assessed the associations between 17 CMS-designated priority comorbid conditions with access to care outcomes across the specific time periods of Summer 2020, Fall 2020, and Winter 2021. While other studies have reported related findings concerning access to care, the current investigation sought to extend previous work in part by separating specific outcomes concerning the treatment of previous conditions and the ability to obtain prescription medications while also separating survey intervals to discern differences between time periods [2,5–8].

2. Materials and Methods

2.1. Study Design

This cross-sectional historical cohort investigation employed nationally representative CMS' Medicare Current Beneficiary Survey (MCBS) COVID-19 Supplement Public Use File (PUF) across three time periods: (1) Summer 2020; (2) Fall 2020; and (3) Winter 2021 [13–15]. Overall, MCBS is a continuous, rotating, longitudinal survey that generalizes to a representative national population of over 50 million Medicare beneficiaries in the United States, and consists of Medicare beneficiaries 65 years of age or older or those below 65 with a Medicare-qualifying disability (e.g., end-stage renal disease) [16]. Inclusion criteria for the MCBS includes a complex random sample of all beneficiaries ever enrolled in Medicare Parts A or B across a given pre-survey time period. Notably, the Public Health Emergency that surrounded the COVID-19 pandemic was accompanied, in part, by an observation that older persons and persons with severe chronic medical conditions were potentially at a higher risk for developing serious COVID-19 illness [13–15,17]. In response, a series of rapidly deployed surveys were deployed by CMS that utilized the existing framework surrounding MCBS to assess and understand the COVID-19 pandemic [13–15]. For the Summer 2020, Fall 2020, and Winter 2021 COVID-19 Supplement PUF surveys, Medicare beneficiaries (i.e., survey respondents) were contacted via telephone by CMS-trained interviewers during the months June–July 2020 (Summer 2020, $n = 11,114$), October–November 2020 (Fall 2020, $n = 9686$), and February–March 2021 (Winter 2021, $n = 11,107$), respectively [13–15]. Although the MCBS includes all beneficiaries, the COVID-19 Supplement PUF was limited to community-dwelling beneficiaries only. To ensure confidentiality, the MCBS's publicly available COVID-19 Supplement PUF data are fully de-identified, completely anonymized, and did not contain protected health information (PHI) [13–15].

Three specific outcomes were analyzed in the current investigation that surrounded the Medicare beneficiary's reported access to care: (1) 'Unable to get [any health] care' (including urgent care, surgery, diagnostics, treatment of an ongoing condition, regular check-up, prescription drugs, dental, vision, hearing, mental health, or any health care because of COVID-19); (2) 'Unable to get care to treat an ongoing condition (i.e., previous condition);' and (3) 'Unable to get care for prescription drugs (i.e., obtain or receive prescription medications)' [13–15]. Other factors collected and reported included demographics (i.e., age category, sex, rural residence, geographic region, income group, Medicare

coverage characteristics, computer/smartphone/internet/video call capability), COVID-related factors (e.g., result of active COVID-19 test, wait time for COVID-19 test result, result of COVID-19 test, hospitalization, number of COVID-19 preventative behaviors, number of COVID-19 information sources), and the presence of 17 CMS priority disease states at any time which included the following: (1) weak immune system because of treatment/drug or health condition; (2) hypertension/high blood pressure; (3) myocardial infarction (MI); (4) angina pectoris/coronary heart disease (CHD); (5) congestive heart failure (CHF); (6) other heart conditions (e.g., valve or rhythm disorders); (7) any heart condition; (8) stroke/brain hemorrhage; (9) high cholesterol; (10) cancer (i.e., non-skin); (11) Alzheimer's/dementia; (12) depression; (13) osteoporosis/soft bones; (14) broken hip; (15) emphysema/asthma/chronic obstructive pulmonary disease (COPD); (16) diabetes/high blood sugar; and (17) any arthritis.

2.2. Statistical Analysis

Descriptive statistics utilizing means and standard deviations for central tendency and percentages for proportions were conducted, with inferential statistics between the three survey time periods involving independent-group *t*-test for continuous variables and omnibus χ^2 tests for proportions, with an alpha level of 0.05 required for significance (i.e., $p < 0.05$). Associations between the three outcomes of interest and the 17 CMS priority disease states were assessed inferentially utilizing bivariable, binomial generalized linear models to yield unadjusted odds ratios (OR) [18,19]. Therein, adjustment for false discovery rate (FDR) due to multiple comparisons was conducted via Simes (1986), which yielded a critical *p*-value of 0.033 for statistical significance to limit the possibility of type I errors [20]. All analyses incorporated a variance estimation method that utilized an extension of the balanced repeated replication (BRR) via Fay's adjustment to provide nationally representative estimates [21,22]. Following the complex sampling method of MCBS, this variance estimation approach incorporates several considerations, including control for stratification, clustering, multi-stage selection, disproportionate sampling, and item non-response [13–15]. All data management and analyses were conducted utilizing SAS version 9.4 (Cary, NC, USA) or Stata MP version 18.0 (College Station, TX, USA).

3. Results

3.1. Descriptive Statistics

Overall, an estimated 55.3–57.4 million Medicare beneficiaries were observed within the three survey waves of the MCBS COVID PUF supplement from 2020–2021. The largest proportions of beneficiaries were between 65 and 75 years of age, female, and White Non-Hispanic, while the most prevalent priority conditions included dyslipidemia (64.4%), hypertension (62.8%), and arthritis (60.1%). The percentage hospitalized overnight for COVID-19 was 24.1, 14.7, and 17.0 during the Summer 2020, Fall 2020, and Winter 2021 surveys, respectively. Concerning outcomes, during the specific Summer 2020, Fall 2020, and Winter 2021 surveys, some 20.9, 7.8, and 6.6 percent of all 55.3–57.4 million Medicare beneficiaries reported an inability to receive at least one type of care, respectively. Among the 3.7–11.6 million respondents reporting this aforementioned inability to receive access to care, 36.1, 32.3, and 32.1 percent involved treatment of ongoing conditions and 8.1, 7.3, and 8.9 percent concerning prescription medications, respectively. The complete descriptive statistics are presented in Table 1.

Table 1. Descriptive statistics of Medicare beneficiaries from the Summer 2020, Fall 2020, and Winter 2021 Medicare Current Beneficiary Surveys.

	Summer 2020	Fall 2020	Winter 2021
Unweighted Sample Size	11,114	9686	11,107
Weighted Population Estimate	56,094,955	55,327,472	57,387,274
Demographics			
Age group			
Under 65 years of age	14.6%	20.5%	14.6%
65–74 years of age	56.3%	47.9%	51.5%
75 years of age and above	32.1%	31.6%	33.9%
Female Sex	54.9%	54.9%	54.6%
Race/Ethnicity			
White Non-Hispanic	75.7%	75.7%	75.8%
African American/Black Non-Hispanic	9.9%	9.7%	9.6%
Hispanic	8.0%	8.4%	8.4%
Other or Unknown	6.4%	6.3%	6.2%
Rural Residence	20.2%	19.9%	20.0%
Geographic Region			
Northeast	17.9%	17.9%	17.5%
Midwest	22.1%	22.0%	21.5%
South	38.1%	38.3%	39.5%
West	21.8%	21.9%	21.6%
Income group, <\$25,000	31.8%	31.9%	30.3%
Medicare-Medicaid dual eligibility, Non-Dual	15.0%	15.3%	14.7%
Medicare Advantage enrollment	--	39.5%	42.1%
Lack of computer, smartphone, tablet, access to internet, or video call capability	11.70%	10.40%	10.40%
COVID-Related Factors			
Result of Active COVID-19 test	3.0% ***	4.7% ***	12.1% ***
Wait time for active COVID-19 test result (mean days ± standard deviation)	--	2.74 ± 1.06	2.45 ± 1.12
Hospitalized overnight for COVID-19	24.1% ***	14.7% ***	17.0% ***
Number of COVID-19 preventive behaviors (mean ± standard deviation)	--	10.71 ± 2.20	10.88 ± 2.28
Number of COVID-19 information source types (mean ± standard deviation)	--	3.36 ± 1.37	3.36 ± 1.37
History of Priority Comorbid Conditions			
Immune Disorders	18.7%	18.1%	16.9%
Hypertension	62.8%	62.6%	62.9%
Myocardial Infarction	9.7%	9.5%	9.4%
Angina Pectoris/Coronary Heart Disease	8.3%	8.4%	8.6%
Congestive Heart Failure	5.7%	5.6%	5.8%
Other Heart Conditions	21.6%	21.2%	21.9%

Table 1. Cont.

	Summer 2020	Fall 2020	Winter 2021
Heart Condition (Any)	32.1%	31.6%	31.4%
Stroke/Brain Hemorrhage	9.6%	9.5%	9.2%
High Cholesterol	64.8%	64.8%	63.6%
Cancer (i.e., Non-Skin)	19.4%	19.3%	19.1%
Alzheimer/Dementia	3.2%	2.9%	2.8%
Depression	27.0%	26.7%	25.9%
Osteoporosis/Soft Bones	20.1%	20.1%	19.6%
Broken Hip	3.2%	3.0%	3.0%
Emphysema/Asthma/Chronic Obstructive Pulmonary Disorder (COPD)	19.1%	18.7%	19.1%
Diabetes/High Blood Sugar	33.7%	33.6%	31.5%
Arthritis (Any)	59.5%	58.7%	64.7%
Access to Care Outcomes			
Unable to Receive at Least One Type of Care ^A	20.9% ***	7.8% ***	6.6% ***
Unable to Receive Treatment for Ongoing Condition ^B	36.1%	32.1%	32.3%
Unable to Obtain Prescription Medications ^C	8.1%	8.9%	7.3%

^A Overall estimated respondent sample sizes, *n*: Summer 2020 = 55,327,472; Fall 2020 = 57,387,274; Winter 2021 = 56,094,955. ^B Overall estimated respondent sample sizes, *n*: Summer 2020 = 11,587,749; Fall 2020 = 4,280,893; Winter 2021 = 3,738,809. ^C Overall estimated respondent sample sizes, *n*: Summer 2020 = 11,640,981; Fall 2020 = 4,300,467; Winter 2021 = 3,750,874. *** $p < 0.001$ (Omnibus χ^2 test across all groups).

3.2. Study Outcome Analysis

3.2.1. Access to Care: Inability to Receive at Least One Type of Care

The unadjusted, bivariable associations of study outcomes with CMS-designated priority comorbid conditions are presented in Table 2. Comorbid conditions associated with significantly higher odds of an inability to receive at least one type of care across all three time periods included six of the 17 (35.2%) priority conditions: (1) immune disorders (minima, $OR_{Summer2020} = 1.741$); (2) other heart conditions (minima, $OR_{Summer2021} = 1.167$); (3) depression (minima, $OR_{Summer2021} = 1.387$); (4) osteoporosis/soft bones (minima, $OR_{Summer2020} = 1.309$); (5) emphysema/asthma/COPD (minima, $OR_{Summer2020} = 1.215$); and (6) arthritis (minima, $OR_{Summer2020} = 1.439$) ($p < 0.033$). Additionally, four other conditions (23.5%) were significantly associated with an inability to receive at least one type of care for at least one of the three time periods: (1) angina pectoris/CHD ($OR_{Summer2020} = 1.487$); (2) cancer ($OR_{Summer2020} = 1.215$); (3) diabetes/high blood sugar ($OR_{Fall2020} = 1.415$); and (4) any heart condition ($OR_{Summer2020} = 1.165$, $OR_{Winter2021} = 1.315$) ($p < 0.033$). Conditions not involving reported problems with overall access to care (7 of 17 conditions, 41.2%) included hypertension, myocardial infarction, congestive heart failure, stroke/brain hemorrhage, high cholesterol, Alzheimer/dementia, and broken hip. Some nine of the 17 priority conditions (52.9%) were noted to be significantly associated with a worse odds in the Summer 2020 survey compared to seven of the 17 conditions (41.2%) in either Fall 2020 or Winter 2021.

Table 2. Unadjusted odds ratios between priority comorbid conditions and inability to access to at least one type of care, treatment of ongoing conditions, or obtain prescription medications among Medicare beneficiaries according to time period.

Priority Condition	Unable to Get at Least One Type of Care			Unable to Get Care for Treatment of an Ongoing Condition			Unable to Obtain Prescription Medications		
	Summer 2020	Fall 2020	Winter 2021	Summer 2020	Fall 2020	Winter 2021	Summer 2020	Fall 2020	Winter 2021
	Odds Ratio (OR)	Odds Ratio (OR)	Odds Ratio (OR)	Odds Ratio (OR)	Odds Ratio (OR)	Odds Ratio (OR)	Odds Ratio (OR)	Odds Ratio (OR)	Odds Ratio (OR)
Immune Disorders	1.741 *	2.179 *	1.945 *	1.864 *	1.633 *	1.905 *	1.195	1.582	0.997
Hypertension	0.977	1.095	0.833	1.025	1.000	0.650 *	0.790	1.189	1.840
Myocardial Infarction	0.888	1.031	1.114	1.131	0.900	1.633	0.952	1.732	1.345
Angina Pectoris/Coronary Heart Disease	1.487 *	1.344	1.308	1.452	1.626	1.127	0.761	1.549	1.376
Congestive Heart Failure	1.041	1.304	1.253	0.907	1.502	2.317 *	1.981 *	3.506 *	1.277
Other Heart Conditions	1.167 *	1.243 *	1.409 *	0.994	1.511	1.216	0.999	1.278	0.993
Heart Condition (Any)	1.165 *	1.185	1.315 *	1.117	1.594	1.324	1.018	1.166	1.276
Stroke/Brain Hemorrhage	1.005	1.208	1.027	1.311	1.431	1.592	1.624	1.697	1.063
High Cholesterol	1.128	1.052	1.002	1.124	1.222	0.842	1.359	0.862	0.853
Cancer (Non-Skin)	1.215 *	1.175	1.024	1.190	0.735	1.133	0.813	0.873	0.534
Alzheimer/Dementia	0.834	1.003	0.766	1.228	1.639	0.868	0.809	0.714	-- ^A
Depression	1.387 *	1.596 *	1.719 *	1.564 *	1.406	1.565	1.542 *	2.529 *	1.087
Osteoporosis/Soft Bones	1.309 *	1.348 *	1.349 *	1.130	1.158	0.925	1.325	2.345 *	1.423
Broken Hip	1.029	0.933	0.914	1.574	1.068	1.791	1.765	1.448	2.259
Emphysema/Asthma/Chronic Obstructive Pulmonary Disorder	1.215 *	1.853 *	1.611 *	1.264	1.273	1.060	1.470	1.837	1.904
Diabetes/High Blood Sugar	1.113	1.415 *	1.184	1.232 *	1.021	1.157	0.877	1.247	1.080
Arthritis (Any)	1.439 *	1.656 *	1.569 *	1.639 *	1.337	2.015	1.668	2.182	3.406

* Statistically significant at $p < 0.033$ via Simes (1986) correction for false discovery rate [20]. ^A Variable omitted due to perfect association with the ability to obtain prescription medications.

3.2.2. Access to Care: Treatment of an Ongoing Condition

Findings concerning the specific inability to receive care for the treatment of a previous condition indicated that only immune disorders were associated with a higher odds across all three time periods (minima, $OR_{Fall2020} = 1.633$, $p < 0.033$). Across any of the survey waves, four of the 17 conditions (23.5%) involved a higher odds of not receiving care for a previous condition: (1) CHF ($OR_{Winter2021} = 2.317$); (2) depression ($OR_{Summer2020} = 1.564$); (3) diabetes/high blood sugar ($OR_{Summer2020} = 1.232$); and (4) arthritis ($OR_{Summer2020} = 1.639$) ($p < 0.033$). Notably, hypertension was the only condition significantly associated with improved odds of access to care for ongoing conditions ($OR_{Winter2021} = 0.650$, $p < 0.033$). Overall, four of the 17 (23.5%) conditions involved significantly worse odds of access to care for previous conditions in the Summer 2020 survey, compared to one (5.9%) in the Fall of 2020 and one (5.9%) in the Winter of 2021.

3.2.3. Access to Care: Prescription Medications

The inability to access prescription medications was observed to be significantly worse among three of the 17 (17.6%) conditions across any time period: (1) CHF ($OR_{Summer2020} = 1.981$, $OR_{Fall2020} = 3.506$); (2) depression ($OR_{Summer2020} = 1.542$, $OR_{Fall2020} = 2.529$); and osteoporosis ($OR_{Fall2020} = 2.345$) ($p < 0.033$). Two of the 17 conditions (11.8%) were associated with access to care problems in the Summer of 2020 compared to three in the Fall of 2020 (17.6%).

4. Discussion

4.1. Findings

The current cross-sectional, nationally representative study of an estimated 55.3–57.4 million Medicare beneficiaries utilized data from the MCBS COVID-19 Supplement PUFs to assess associations between CMS-designated priority conditions and access to care spanning the Summer of 2020 to the Winter of 2021. Overall, at the onset of the pandemic, one-fifth of Medicare beneficiaries (20.9%) reported an inability to access at least one type of care, decreasing to under one-tenth in subsequent time periods. A significantly worse odds of an ability to get care across all time periods was associated with several priority conditions including immune disorders, cancer, depression, osteoporosis, depression, diabetes, arthritis, and numerous cardiovascular and pulmonary conditions. Additionally, among those reporting an inability to access care, approximately one-third involved treatment of an ongoing condition and under one-tenth involved prescription medications.

4.2. Related Literature

The current study extended previous research in important ways, particularly by analyzing subgroups of Medicare beneficiaries reporting a lack of access to care for ongoing conditions and for prescription medications over time, across each of the three MCBS COVID-19 Supplement PUF surveys [2,5–8]. Other investigations have utilized varying analytic approaches, including bivariable χ^2 analysis, linear probability modeling, multivariable logistic regression, and multivariate classification random forest [2,5–8].

Regarding overall findings from prior work, Park and Stimpson (2021) reported that 33.1 percent of all Medicare beneficiaries during the Summer 2020 and Fall 2020 surveys had an inability to access care for an ongoing condition, and that physician-driven factors (e.g., closed office, unavailable appointments) accounted for 70 percent of these reports [6]. The relationships between access to care and various specific conditions is present within other selected research, notably summarized within Park et al. (2022) which indicated that persons with four or more comorbidities were more likely to report an inability to access care compared to those with one or fewer comorbid conditions [2,5–8]. Conditions including heart disease, depression, immune disorders, and osteoporosis were consistently associated across various time periods with an inability to access care, findings that are also supported by the current investigation [6–8].

Pertaining to cardiovascular conditions, Tsuzaki and Taira (2022) reported a higher percent of beneficiaries with heart disease being unable to access care across all three MCBS COVID-19 survey periods (i.e., Summer 2020 = 22.4%, Fall 2020 = 8.6%, Winter 2021 = 7.6%). Importantly, Tsuzaki and Taira's (2022) observations would numerically differ from the current study because these author's calculated the percent of respondents with heart disease that reported foregone care (i.e., rather than the overall percent of Medicare beneficiaries with heart disease irrespective of foregone care as the denominator presented in the current study) [7]. Over the entire survey period (i.e., Summer 2020 to Winter 2021 in aggregate), Lu and Liao (2022) found that angina pectoris/CHD, CHF, and other heart conditions were significantly associated with a higher odds of an inability to receive care of 1.38, 1.14, and 1.22, respectively ($p < 0.05$) [8]. Specifically within each individual survey time period, the current study observed that the composite of heart conditions was significantly associated with a higher odds of an inability to receive at least one type of care during two time periods ($OR_{Summer2020} = 1.165$, $OR_{Winter2021} = 1.315$) ($p < 0.033$). Concerning specific cardiovascular conditions, CHF and MIs were not signifi-

cantly associated with an inability to access care, while angina pectoris/CHD and other heart conditions were ($OR_{Angina, Summer2020} = 1.487$, $OR_{Other Heart Conditions} = 1.167$ or greater) ($p < 0.033$).

Relating to Medicare beneficiaries with depression, limited only to the Summer 2020 survey, Balasuriya et al. (2021) reported a 1.28 times higher adjusted odds of an inability to get at least one type of care after controlling for age, sex, race/ethnicity, income, rural residency, census region, tobacco use, and other comorbidities ($p < 0.01$) [5]. Spanning across each of the three survey time frames, via bivariable analyses, the current study observed an increased unadjusted odds of 1.387, 1.596, and 1.719 concerning at least one type of care, respectively ($p < 0.033$). Furthermore, depression was also associated with an inability to receive treatment at the onset of COVID-19 ($OR_{Summer2020} = 1.564$) extending for two time periods with access prescription medications ($OR_{Summer2020} = 1.542$, $OR_{Fall2020} = 2.529$) ($p < 0.033$). At the onset of COVID-19 during the Summer 2020 time frame, depression was associated with a higher odds of an inability to receive care for all three outcomes, the only priority condition that was ($p < 0.033$).

Musculoskeletal priority conditions defined via CMS included arthritis (any), osteoporosis/soft bones, and broken hip. Therein, Tsuzaki and Taira (2022) reported a higher percent of beneficiaries with arthritis being unable to access care across all three MCBS COVID-19 survey periods (i.e., Summer 2020 = 22.5%, Fall 2020 = 9.4%, Winter 2021 = 6.2%), again noting that those observations would differ from the current study because those represent the percent of respondents with arthritis that reported foregone care (i.e., rather than the overall percent of Medicare beneficiaries with heart disease irrespective of foregone care as presented in the current study); findings from the current work subsequently indicated an increased odds of 1.439 or greater ($p < 0.033$) [7]. Additionally, the current investigation found a 1.639 higher odds of an inability to access treatment for an ongoing condition ($p < 0.033$). Osteoporosis combined with broken hip was also associated with an inability to access at least one type of care within Tsuzaki and Taira (2022) (i.e., Summer 2020 = 24.2%, Fall 2020 = 9.4%, Winter 2021 = 8.0%), with Lu and Liao (2022) reporting odds ratios of 1.37 for osteoporosis ($p < 0.05$) and broken hip of 1.00 (i.e., not significant) [7,8]. The current study observed that osteoporosis was associated with odds ratios greater than or equal to 1.309 for access to at least one type of care, and a 2.345 times higher odds for prescription drugs during the Fall of 2020 ($p < 0.033$); no significant differences were observed for broken hip as a separate condition.

The CMS priority condition involving immune disorders (i.e., weak immune system because of treatment/drug or health condition) was noted to be associated a 1.741 times higher odds or greater of an inability to access at least one type of care across all time periods, and at least a 1.864 times higher odds or greater of an inability to get care for an ongoing condition ($p < 0.033$). Two investigations assessed weak immune systems, with a multivariable-adjusted percentage point of 0.05 ($p < 0.001$) from Park and Stimpson (2021), and an 18 percent prevalence in Lu and Liao (2022) [6,8].

Completing other priority conditions, both Park and Stimpson (2021) and Lu and Liao (2022) reported that emphysema/asthma/COPD was associated with an inability to receive at least one type of care across the combined survey periods (i.e., aggregating Summer 2020 to Winter 2021), with a multivariable-adjusted percentage point of 0.03 and multivariable-adjusted odds of 1.42, respectively ($p < 0.001$) [6,8]. Again, in the current work, emphysema/asthma/COPD was associated with a higher odds of 1.215 or greater across all three separate time periods concerning an inability to receive at least one type of care ($p < 0.033$). Tsuzaki and Taira (2022) observed that diabetes was associated with an inability to access at least one type of care in the Fall of 2020 (6.9% of respondents, $p < 0.01$), paralleling the increased odds of 1.415 in the current work ($p < 0.033$) [7]. However, a 1.232 times higher odds was observed in the present study with diabetes for an inability to get care for an ongoing condition at the onset of the COVID-19 pandemic ($p < 0.033$). Finally, relating to non-skin cancers, the current investigation found a higher odds of an inability to get at least one type of care at the onset of the pandemic ($OR_{Summer2020} = 1.215$, $p < 0.033$),

with Lu and Liao (2022) having reported an odds of 1.16 across the aggregate survey time periods ($p < 0.05$) and Park and Simpson (2021) noting no significant difference [6,8].

4.3. Limitations

Despite the current study's findings, certain key limitations must be considered in interpreting results from the current study. Foremost, while this investigation incorporated bivariable analyses via a generalized linear model to yield odds ratios, numerous other factors may likely have been present that could provide a more valid predictive framework to interpret risk factors or potential intervention points [19]. Stated differently, multivariable control for other demographic, social, clinical, provider, and health system factors were not included, and a respondent's self-report of access to care might not solely be related to any specific comorbid condition. Beyond concerns of internal validity, despite CMS' development and use of trained interviewers, the self-reported nature of the MCBS may also be subject to recall bias [23]. Additionally, the fully anonymized nature of the PUF databases prohibit the linkage of a single beneficiary across all three survey waves within the MCBS COVID-19 Supplement [13–16]. Finally, as these data are representative of Medicare beneficiaries, caution is warranted in generalizing findings to other specific populations or health care systems.

5. Conclusions

This nationally representative study of over 55 million Medicare beneficiaries observed that approximately one-fifth of beneficiaries reported not being able to receive at least one type of health care during the beginning of the COVID-19 pandemic. Significantly worse odds of an ability to get care spanning across Summer 2020, Fall 2020, and Winter 2021 was observed among several priority conditions including immune disorders, cancer, depression, osteoporosis, depression, diabetes, arthritis, and numerous cardiovascular and pulmonary conditions. Additionally, among those reporting an inability to access care, approximately one-third involved the treatment of an ongoing condition and under one-tenth involved prescription medications. While access to care more broadly impacted multiple priority conditions at the onset of the pandemic, both immune disorders and depression continued to be impacted in the time periods that followed. To identify modifiable risk factors and to develop active interventions, future work should continue to assess the complex associations between outcomes, access to care, comorbidities, evolving healthcare infrastructures, computerization, and various public health initiatives.

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Data Availability Statement: Publicly available datasets were analyzed in this study. These data can be found at: <https://www.cms.gov/data-research/statistics-trends-and-reports/mcbs-public-use-file> (accessed on 5 May 2022).

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