

# Social Connectivity During the COVID-19 Pandemic: Disparities among Medicare Beneficiaries

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## Abstract

**Purpose:** Social connections are essential for health and well-being at all ages and may be especially important for promoting health in later life. Maintaining social connections, however, became increasingly difficult during the COVID-19 pandemic when stay-at-home orders were enacted, and social distancing became necessary. This study examines the social connectivity among Medicare beneficiaries during the COVID-19 pandemic highlighting the importance technological availability, income, and race. **Methods:** Data from the 2020 Medicare Beneficiaries Survey COVID supplement was used to evaluate social connectedness during the spring and fall of 2020. Binomial logistic regression evaluated the relationship between feelings of social connectedness and race/ethnicity, urban status of residence, income, availability of household technologies, internet access, and chronic conditions. **Results:** Lower social connectivity is significantly correlated with race and income. Blacks had a nearly 30% higher likelihood of feeling socially disconnected than other racial groups. Individuals with chronic conditions, particularly cancer, were significantly more likely to feel socially disconnected. Internet access and the availability of technological devices decreased the odds of feeling socially disconnected by 20% and 15% respectively. **Conclusion:** The COVID-19 pandemic decreased the social connectedness of many vulnerable groups specifically Blacks, those living with chronic conditions, and individuals with limited access to technology. While it is outside the scope of the current study, additional research is needed to determine how to address the social and psychological impacts of the COVID-19 pandemic among elderly Americans.

## Keywords

COVID-19, social connectivity, racial disparities, medicare

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## Introduction

Social connectedness, defined as a person's subjective sense of having close and positively experienced relationships with others in the social world, has been linked to both physical, and emotional well-being.<sup>1</sup> Research has shown that social connectedness is also associated with increased rates of loneliness and well as chronic health conditions such as hypertension.<sup>2</sup> Because older adults are at a higher risk for social isolation and more likely to have health concerns, lack of social connectedness, and social isolation has become a worldwide concern due to the COVID-19 pandemic. On March 11, 2020, the Centers for Disease Control and Prevention declared the COVID-19 outbreak a pandemic and by early April the disease had infected approximately 1.5 million people worldwide. To slow down its transmission, states, businesses, and organizations implemented

social/physical distancing guidelines which encouraged individuals to stay at least 6 feet apart and placed capacity limits on indoor gatherings. While these social distancing policies were intended to help protect physical health, they greatly limited people's range of social interactions—a consequence that can potentially have devastating mental and physical health consequences.

Understanding the impact of social connectedness has become of major importance during the pandemic. A review

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conducted by Boamah et al<sup>3</sup> classifies the risk of social isolation among those living in long-term care facilities as stemming from the individual and their behavior, the system through which care is provided, and the structural biases that exist therein. Evidence has linked these risks for social isolation to specific health outcomes. For example, being socially connected significantly reduces risk for premature mortality from all causes by nearly 50% whereas loneliness or social isolation increases risk for earlier death (by 26% for loneliness, 29% for social isolation, and 32% for living alone).<sup>4-6</sup> The magnitude of these effects on risk for death rivals that of other well-established risk factors for mortality including obesity, physical inactivity, and air pollution.<sup>7,8</sup>

Concerns about social connectedness, or a sense of belonging and closeness with others, have also become a major concern during the COVID-19 pandemic because it is fundamental to human development, and well-being.<sup>9</sup> For example, having frequent social interactions, and spending more time talking with others are both associated with greater well-being.<sup>10</sup> People who engage in more social interactions relative to control activities report higher levels of positive emotion and social connectedness.<sup>11</sup> Poorer social connection is associated with newly and previously diagnosed type 2 diabetes,<sup>12</sup> coronary heart disease, and stroke.<sup>13</sup> Social connection and isolation even influence the probability of developing a cold<sup>14</sup> independent of baseline immunity, demographics, and health practices. Among mental and cognitive health outcomes, meta-analytic data support the influence of poor social connection on risk for depression,<sup>15</sup> poorer cognitive function,<sup>16</sup> and dementia.<sup>17</sup> In addition to the effects on physical health and disease, there is recent evidence that social isolation significantly contributes to deaths of despair such as drug- and alcohol-related deaths,<sup>18</sup> and suicide.<sup>19</sup> Unfortunately, social connectedness appears to have been dramatically reduced during the pandemic.

The issue of social connectedness appears to have a unique impact on older adults.<sup>20</sup> Recent research on the biology of aging emphasizes the essential role of physiological stress response and regulation across multiple bodily systems in shaping longevity.<sup>21,22</sup> Laboratory research has demonstrated that social isolation and hypervigilance increase the incidence of mammary tumors<sup>23,24</sup> and compromise innate immune response to stress.<sup>24</sup> Deficits in social relationships such as social isolation or low social support can lead to chronic activation of immune, neuroendocrine, and metabolic systems that lie in the pathways, leading to cardiovascular, neoplastic, and other common aging-related diseases.<sup>25-28</sup> Recent data from observation studies has documented the association between social relationship measures such as social integration and support with biomarkers of inflammation,<sup>28,29</sup> metabolic syndrome,<sup>26,28</sup> and cumulative dysregulation

indicated by allostatic load.<sup>30</sup> The heart and blood pressure of people with healthy relationships respond better to stress.<sup>31</sup> Healthy social connections enhance the immune system's ability to fight infectious diseases.<sup>32</sup>

Considering the literature related to social connectedness and older adults, there is major concern that older adults may be more likely to face factors such as living alone, the loss of family or friends, chronic illness, and hearing loss during the COVID-19 pandemic.<sup>33</sup> In fact, nearly one-fourth of adults aged 65 and older are socially isolated.<sup>34</sup> Consequently, it is possible that the COVID-19 pandemic has uniquely impacted the health of older adults. Using data on Medicare beneficiaries, this study explores the prevalence of social isolation among adults over age 65 during the COVID-19 pandemic. This study contributes to the literature on COVID-19 related outcomes by highlighting potential additional mental and emotional health consequences. This paper proceeds with a discussion of the data and empirical methods followed by the major findings and general conclusions.

## Methods

This study examines the social connectedness of Medicare beneficiaries during the COVID-19 pandemic using a nationally representative sample.

### Study Design

Data for this study was drawn from the COVID-19 Summer and Fall 2020 Rapid Response Supplements to the Medicare Current Beneficiary Survey (MCBS) Public Use Files originally created by the Centers for Medicare & Medicaid Services Office of Enterprise Data and Analytics (OEDA). The COVID-19 Supplement was developed to assist researchers in analysis on health disparities, access to and satisfaction with routine and primary care, and telemedicine use during the pandemic.

The MCBS supplement questionnaire asked, "have you felt more socially connected to family and friends, less socially connected to family and friends, or about the same?" A binary indicator of social disconnectedness was created equaling 1 if the individual reported being less socially connected and zero otherwise. The MCBS included several additional survey items germane to the study of social connection. First, respondents also indicated whether they owned or used smartphones, tablets, or desktop/laptop computers. A count of the number of these devices' respondents owned/used was created ranging from zero to three. Second, a binary indicator of respondents' internet availability was created. Given regional and urban differences in technological availability, dummy variables indicating residence in the South and a metropolitan area were added. A binary variable controlled for individuals with income

below \$25,000. Finally, 4 morbidity classifications were created from self-reported health outcomes—neurological, cardiovascular, cancer, and other. Neurological conditions include stroke brain/hemorrhage and Alzheimer's/dementia. Cardiovascular conditions include hypertension/high blood pressure, Myocardial infarction, angina pectoris/congenital heart defects, congestive heart failure, other heart condition (eg, valve/rhythm), high cholesterol, and diabetes/high blood sugar. Cancer includes all forms of non-skin cancers, while other chronic conditions include depression, osteoporosis/soft bones, broken hip, emphysema/asthma/COPD, and any form of arthritis.

### Statistical Analysis

The MCBS classifies all of the 20 800 respondents as Black Non-Hispanic (Black), White Non-Hispanic (White), Hispanic, or other racial/ethnic groups. Social connectedness was first assessed using descriptive statistics comparing the 4 racial/ethnic groups. To estimate differences in social connectedness and assess the association with technological access, income, region of residence, and other demographic factors, a logistic model was regressed controlling for demographic, environmental, and chronic health conditions. All empirical analysis was done using SAS 9.4 (Cary, NC).

### Results

Descriptive statistics for the full sample ( $N=20\,800$ ) and 4 racial subgroups are listed in Table 1. Nearly 10% of the sample was Black and 10% was Hispanic. A total of 55% of the sample was female and 76% lived in metropolitan areas. Forty percent were classified as low-income—earning less than \$25 000 per year. Almost 78% of the sample reported having access to the internet and respondents owned, on average, 1.5 ( $sd=1.105$ ) technological devices. The majority (85.9%) of the sample reported a cardiological condition compared to 13% with neurological conditions, 20% with cancer and 65.7% with other types of chronic conditions. Finally, 35.4% of the total sample of the entire sample reported lower than normal social connectedness.

Baseline comparisons by race indicated that a larger proportion of Whites (81.8%) reported having internet access when compared to both Blacks (65%) and Hispanics (60.0%) ( $\chi^2=716.785$ ,  $P<.001$ ). Similarly, Whites (1.714,  $sd=1.082$ ) owned on average nearly two technological devices, compared to lower ownership among Blacks (1.217,  $sd=1.106$ ) and Hispanics (1.084,  $sd=1.054$ ) who have an average of 1 device ( $\chi^2=911.162$ ,  $P<.001$ ). More than 50% of Blacks (68.9%) and Hispanics (65.3%) report being low-income compared to only 31% of Whites. Cardiovascular conditions are the most prevalent among all subgroups being reported by 85.4% of Whites, 86.1% of

Blacks, 88.1% of Hispanics, and 86.8% of other racial groups. Neurological conditions and non-skin types of cancer only appear in between 12% to 15% and 15% to 20% subgroups, respectively. Finally, a higher percentage of Whites (37.5%) reported feeling socially disconnected when compared to Hispanics (30.8%) and Blacks (24.8%) ( $\chi^2=134.4434$ ,  $P<.001$ ).

Table 2 contains multivariate logistics estimates designed to examine reports of social disconnectedness. The binary dependent variable equaled 1 if respondent indicated that they were socially disconnected and zero otherwise. Parameter estimates represent the log odds ratio associated with a one-unit change of the predictor, all other predictors being held constant. Odds ratios and corresponding confidence intervals are also provided. All else held constant, females had lower odds of feeling socially disconnected ( $OR=0.7824$ ,  $CI=0.7502$ ,  $0.816$ ) than males, individuals living in more urban, metropolitan areas were also less likely to feel disconnected ( $OR=0.9224$ ,  $CI=0.8779$ ,  $0.9691$ ) than those living in rural, less populous locations. Those with internet access ( $OR=0.9446$ ,  $CI=0.8765$ ,  $1.018$ ) and more available technological devices ( $OR=0.8356$ ,  $CI=0.808$ ,  $0.8639$ ) had lower likelihood of feeling disconnected than those without these capabilities. Low-income individuals reported more social disconnectedness ( $OR=1.2464$ ,  $CI=1.1863$ ,  $1.3094$ ) when compared to household with income greater than \$25 000. Chronic conditions appeared to only be slightly related to social connectedness. Compared to those with cancer (the reference category) individuals with cardiovascular, neurological, and other chronic conditions had lower odds of social disconnectedness, although only other conditions were statistically significant. Finally, regarding racial groups, Blacks were nearly 30% ( $OR=1.2978$ ,  $CI=1.1905$ ,  $1.4148$ ) more likely to feel socially disconnected compared to other racial groups. It is also important to note that even though there were statistically significant differences in reports of social connectedness, the reported proportions are likely underestimates of the true differentials as they do not account for difference in income, technological availability, internet access, or prevalence of chronic diseases.

### Discussion

This study examined the reported social connectedness of over 18 000 Medicare beneficiaries who responded to the MCBS Blacks being 30% more likely to report feeling socially disconnected than Whites and Hispanics. Although initial comparisons suggested Whites were more likely to feel socially disconnected, after adjusting for income level and access to technology, Blacks were more likely to report being social disconnected. These findings of racial differences are significant for several reasons. First, although racial differences in social connectedness have been reported



**Table 2.** Logistic Regression Results: Social Connectedness of Medicare Beneficiaries during COVID-19.

	Estimate	SE	Log likelihood = -10 902.7		AIC = 21 827.32	
			Likelihood ratio	95% CI	Odds ratio	95% CI
Intercept	-1.507	0.0688	-1.6436	-1.3737		
Female	-0.2453	0.0214	-0.2875	-0.2034	0.7824	0.7502 0.816
Black	0.2607	0.044	0.1761	0.3488	1.2978	1.1905 1.4148
Hispanic	0.0505	0.0399	-0.0261	0.1305	1.0518	0.9726 1.1375
Metropolitan	-0.0808	0.0252	-0.1307	-0.0319	0.9224	0.8779 0.9691
Internet access	-0.057	0.0382	-0.1323	0.0174	0.9446	0.8765 1.018
Technological devices	-0.1272	0.0126	-0.1027	-0.0519	0.8356	0.808 0.8639
Low income	0.2202	0.0252	0.1712	0.2699	1.2464	1.1863 1.3094
Other chronic conditions*	-0.1153	0.0226	-0.1599	-0.0713	0.8911	0.8525 0.9314
Cardiovascular*	-0.0333	0.0304	-0.0938	0.0252	0.9727	0.9118 1.0377
Neurological*	-0.0276	0.033	-0.0911	0.0383	0.9673	0.9114 1.0266

Indicates significant at the 95% confidence level.

Dependent variable: social connectedness (1 = Less connected than normal, 2 = Same/more connected as normal).

\*Reference category: cancer.

prior to COVID-19, previous reports have indicated that older White adults were more likely to report social disconnectedness than older Black adults. In a study of 3005 community-residing adults aged 57 to 85 from the National Social Life, Health, and Aging Project, Miyawaki<sup>35</sup> found that social disconnected had a differential affect by race. The study showed that despite social isolation negatively impacted health outcomes regardless of racial group however, both perceived isolation and social disconnectedness was negatively associated with physical and mental health in White elders whereas in Black elders' social disconnectedness was negatively associated with physical health and perceived isolation was negatively associated with mental health. Finally, there was no reported association between social isolation and physical health among Hispanic elders yet they exhibited a significant negative association with mental health. The author noted that some of the differences were a reflection of Black elders being more likely to live in residences with extended family members and non-kin. These findings are supported by Cross<sup>36</sup> who noted that Blacks are more likely to live in households with grandparents, cousins, aunts, and uncles. Although co-residential family members can be available for emotional support and companionship, multigenerational households may be a risk factors for contracting COVID-19 particularly given that Blacks are more likely to be essential workers.<sup>37</sup> The findings reported here suggest that COVID-19 may have a new and differential impact on social connectedness.

Second, the impact of racial differences in income and internet access likely has synergistic impact on reports of social connectedness during the COVID-19 pandemic. In this study Whites reported having higher incomes and internet access than Blacks and Hispanics. These findings are important because more than half of Americans report that

the internet has been essential during the COVID-19 pandemic.<sup>38</sup> Yet a digital divide clear exists among the most wealthy and poor Americans as well as people of color relative to White Americans.<sup>38</sup> Although at least 1 study reported that Blacks who do have internet access are more likely to post content related to COVID-19 on social media,<sup>39</sup> Blacks and other people of color are less likely to have internet access thus impacting their health-related outcomes. For example, internet access expedites signing up for vaccines which is important because other approaches for making appointments (telephone & call centers) are regularly overwhelmed by the call volume among those seeking the vaccine.<sup>40</sup>

Third, it is not exactly clear how the substantial racial disparities in income and internet access that have been reported in COVID-19 have impacted issues of social connectedness. In addition, it is not clear why greater social disconnectedness was noted among Blacks in this sample but previously reported among Whites in studies prior to COVID-19. It is however well established that people of color have been substantially impacted by the pandemic with Blacks dying COVID-19 related deaths at rates 1.4 times those of Whites.<sup>41</sup> Those figures have been magnified among elderly Blacks as they represented nearly 40% of adults age 65 and older who died of COVID-19.<sup>42</sup> Some of the observed disparities have been linked to pre-COVID-19 health disparities in chronic disease conditions such as diabetes, hypertension, cardiovascular disease, and obesity that are known to magnify COVID-19 death rates.<sup>43</sup> Many Blacks also suffer from the social determinants of health including income, education, and employment among others are also likely contributors to greater disease burden among people of color. Therefore, issues of race and age are both potentially at play creating a "double jeopardy" in the

significant burden among elderly Blacks.<sup>37</sup> Consequently, Bhandari et al<sup>44</sup> argue that elderly Blacks may be one of the most vulnerable groups to COVID-19 related morbidity and mortality and strategies must be developed to address historical structural racism, social determinants of health while also building trust with the community. The authors also argue that greater health equity is needed rather than simply everyone receiving the exact same (health equality) to manage the condition.

Fourth, understanding racial differences in social connectedness during COVID-19 is not likely a straightforward process. A recent study by Okabe-Miyamoto et al<sup>45</sup> found that family network size, network range and total number of friends was smaller than White elders resulting in fewer socializing opportunities. Their work also showed that social connectedness is more of a function of who is present rather than how many are present. However, the impact of race on social connectedness is less clear because of the underlying current events; a once in a lifetime pandemic. More specifically, social connectedness is currently being impacted by traditional age-related factors in addition the complex level of restrictions that are inconsistent across states, cities, towns, and communities. Therefore, the true impact on mental and physical health is less clear and in particular how such differences might emerge across racial groups particularly those with differential income levels.

### Limitations

Despite providing insight into social connectedness during the COVID-19 pandemic, the MCBS has several limitations as a data source. First, the questions regarding social connectedness were included for the first time in the COVID Supplement and did not appear in any previous surveys. Therefore, it is not possible to compare the reported level of social connectedness to those experienced prior to the pandemic. Second, all data in the MCBS is self-reported and therefore subject to recall, likeability, and non-response bias. Third, public use files released by MCBS contain primarily categorical data and lack many relevant health and sociodemographic variables such as marital status, household size, exact age, type of residential location, and sources of income.

### Conclusion

Social connectedness is a social and public health problem that affects people of all ages, especially elderly populations. Previous studies have found that social isolation negatively affects both physical and mental health.<sup>46</sup> This study shows that Blacks and low-income individuals faced significantly higher odds of feeling socially disconnected during the COVID-19 pandemic. However, access to technological devices such as smartphone, laptops, and tablets decreased the odds of isolation. The significantly higher likelihood

among Blacks is troubling given that the pathways between social disconnectedness and physical health are not well understood. It is plausible that different dimensions of social isolation affect various racial and ethnic groups of older people differently, but Blacks do face an increased likelihood of severe COVID-19, hospitalization from COVID-19, and mortality related to COVID-19 which could be associated with these feelings.<sup>37</sup> Additional research is needed to explore the sources of these racial and ethnic differences that incorporate different considerations for different sub-groups.

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