Comorbid Conditions Among Alzheimer's and Related Dementia Medicare Beneficiaries Post Pandemic

NBER U01 Grant Proposal Solicitation

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The novel coronavirus (COVID-19) has caused a global public health crisis which has left many governments struggling to grasp the magnitude of its effect and how to proceed post pandemic. As of July 2021, there have been nearly 600,000 COVID-19 deaths in the United States. The pandemic has proven to be catastrophic, especially for individuals over 65 years of age who account for 80% of all COVID or COVID-related deaths in the U.S. (CDC, 2021). This vulnerable population also poses unique concerns given the prevalence of other diseases and the consequential impacts of isolation spurred by stay-at-home orders used to help combat the spread of the virus. In this project, we aim to offer an in-depth analysis of how COVID-19 affected the rates of comorbid conditions among older Americans who have been diagnosed with Alzheimer's Disease and Related Dementias (ADRD).

As the population of Americans over 65 years old continues to grow, the number of Americans living with ADRD is predicted to grow at a even more rapid rate. Over 6 million Americans over 65 years old are living with ADRD; 11% of the over 65 population. By 2050, it is predicted that this group would more than double– accounting for over 15% of Americans over 65 years old. Additionally, it has been well established that the costs of health and long-term care associated with ADRD are one of the U.S's costliest conditions. The projected cost to care for people living with ADRD in the U.S. in 2021 is $355 billion, with 51% of the costs covered by Medicare, 11% Medicaid, and 21% out-of-pocket expenses. In 2020, Medicare beneficiaries with ADRD required roughly $52,400 per person in health care costs compared to $14,900 per person for beneficiaries without ADRD.

Individuals living with ADRD are also more likely to live with other chronic conditions, such as cardiovascular disease, diabetes, kidney disease, and depression (Santiago Jose A., 2021). Over 90% of all individuals living with ADRD have at least one other chronic condition (Alzheimer's Association, 2021). The directional relation of the aforementioned comorbid conditions and ADRD has not been well-established, but it has been acknowledged that they are associated with higher ADRD risk. Conversely, it has been well established that many of these comorbid conditions disproportionately affect Black and Hispanic populations. According to Alzheimer's Association (2021) Black patients are twice, and Hispanic patients are 1.5 times more likely to live with ADRD than white patients. Health-related factors, socioeconomic risk factors, and structural racism are often cited as contributing factors to disparities in prevalence among racial and ethnic minorities.

This project proposes to answer three research questions. The first examines comorbidities among elderly patients with ADRD since the height of the Coronavirus Pandemic in the US

(March 2020). Second, we determine whether isolation as measured through state closures or living arrangements worsened rates of comorbidities among individuals with ADRD. Lastly, we examine whether changes in rates of comorbid health conditions differed across racial, ethnic, or gender.

The primary data source for this project will come from Medicare claims.[1] Although a few data sources survey individuals with ADRD, none compare to the comprehensive nature of Medicare data. The claims data provides a host of information on the elderly with ADRD, including comorbid conditions, race/ethnicity, gender, and zip code/county of residence. We are also able to measure the prevalence of comorbidities in a few ways. We can examine diagnoses, reasons for hospitalizations, or prescriptions. Medicare also collects data on pre-hospital living arrangements, which can proxy for how isolated a Medicare patient with ADRD is. We will also consider the role Telehealth has played in isolation and access to care. Although we may consider others, we will focus on the most common comorbid conditions for ADRD: depression, diabetes, and cardiovascular disease.

Medicare claims will be merged with state closure and reopening information defined by either a stay-at-home order or the non-essential business closure as used in Gupta et al. (2020) and Ziedan et al. (2020). We will also consider differences for states that attempted to reduce medical utilization by suspending non-urgent or elective medical procedures. These measures allow us to proxy for social isolation. Similarly, we also want to consider the number of Coronavirus cases and deaths in the county of residence of a Medicare beneficiary.

Our first analysis will be descriptive and generally examine changes in the most common comorbid conditions in the quarter-years before and after March 2020. We can consider a simple regression that measures the prevalence of the condition by estimating coefficients quarter-year dummies before and after the height of the pandemic (relative to the first quarter of 2020). To address the second research question related to the effects of isolation, we plan to implement a differences-in-differences (DD) approach that compares states by levels of relative isolation. We can compare states that implemented stay-at-home orders earlier to those that implemented later (or not at all), for instance. We can also determine whether the intensity of the pandemic, measured by cases and deaths, before-and-after March 2020 affected the prevalence of comorbid conditions. Medicare data also collects information on living arrangements (e.g., living alone, nursing facility, etc.) for some of its beneficiaries. We can also use this variable as a first stage to determine whether the pandemic affected the living arrangement of those with ADRD and whether this affected the rate of comorbid conditions. Moreover, we examine whether the use of Telehealth during the pandemic served as a mitigating factor in the prevalence of comorbid conditions. Lastly, given the disparity in ADRD diagnosis across race and ethnicity, we consider whether the onset of the pandemic exacerbates differences in comorbidities. In this setting, we can also implement a DD across time and race/ethnicity or a triple difference when considering the isolation effects discussed above.

[1] We are hoping that with the funds of this grant and assistance from NBER that we will be able to access this data.

References

Alzheimer's Association (2021). 2021 alzheimer's disease facts and figures. Alzheimers. Dement., pages 459 – 509.

CDC (2021). Weekly updates by select demographic and geographic characteristics: Provisional death counts for coronavirus disease 2019 (covid-19). National Center for Health Statistics, Atlanta, GA.

Gupta, S., Nguyen, T. D., Rojas, F. L., Raman, S., Lee, B., Bento, A., Simon, K. I., and Wing, C. (2020). Tracking public and private responses to the covid-19 epidemic: evidence from state and local government actions. Technical report, National Bureau of Economic Research.

Santiago Jose A., P. J. A. (2021). The impact of disease comorbidities in alzheimer's disease. Frontiers in Aging Neuroscience, page 38.

Ziedan, E., Simon, K. I., and Wing, C. (2020). Effects of state covid-19 closure policy on non-covid-19 health care utilization. Technical report, National Bureau of Economic Research.