


# Neuropsychological and Functional Impact of COVID-19 on Mild Cognitive Impairment

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## Abstract

We present a case report to showcase that behavioral, cognitive, and functional decline may be associated with COVID-19 stay-home guidance among older adults with pre-existent cognitive impairment. In a functionally independent and physically active older adult with Mild Cognitive Impairment, there was worsening in depression and anxiety symptoms associated with the restrictions of COVID-19. Functional decline was also noted as assessed by Instrumental Activities of Daily Living. We discuss solutions to mitigate the effects of COVID-19 restrictions in this vulnerable population.

## Keywords

older adults, COVID-19, depression, mild cognitive impairment, activities of daily living (ADLs), instrumental activities of daily living (IADLs)

## To the Editor

The Corona virus disease (COVID-19) has rightfully resulted in widespread stay home/shelter in place recommendations which could range from mere annoyance to a potential healthcare crisis for older adults. Loneliness is common in older adults even when they are living independently and in close proximity with others.<sup>1</sup> Loneliness is associated with feelings of helplessness, powerlessness, and vulnerability.<sup>1</sup> COVID-19 quarantines have the potential to further isolate people resulting in negative psychological effects including post-traumatic stress symptoms, confusion, and anger.<sup>2,3</sup> In a community sample of young adults, over half of the respondents rated the psychological impact of the COVID-19 emergency as “moderate” or “severe.”<sup>4</sup> In another study of young adults, 29% of respondents indicated experiencing “high” or “very high” levels of stress, a percent that far exceeds that of pre-pandemic levels.<sup>5</sup> Those that have pre-existing cognitive impairment and live alone may be at higher risk of psychological decompensation due to stay-home guidance compared to those that do not have cognitive impairment and live with family. We present a case of behavioral and functional decline in an older adult with mild cognitive impairment (MCI) and depression after COVID-19 stay-home guidance was placed.

Mr. S. was a 75-year-old retired lawyer with MCI who lived alone in the community and had a longtime girlfriend who was actively involved. At baseline, 6 months ago, he was independent in performance of his basic Activities of Daily Living

(ADLs)<sup>6</sup> and Instrumental Activities of Daily Living (IADLs)<sup>7</sup> and was physically active, jogged 3 miles daily, and played pickleball regularly. He had authored 9 books in the past and his girlfriend hoped that he would be able to finish his memoir during the COVID-19 physical restrictions. His comorbidities included hypertension, hyperlipidemia, chronic kidney disease, depression, and low back pain. His depression was controlled with mirtazapine. During his initial in-person evaluation 6 months ago (pre-COVID confinement), cognitive, behavioral and functional assessments were performed by a multidisciplinary team. His scores on the Modified Mini-Mental State Examination<sup>8</sup> were 97/100; 28/30, and the New York University Paragraph Immediate and Delayed Recall Test (NYU-PRT) were below 8 and 6 respectively. The NYU-PRT is a measure of episodic prose recall and is a good predictor of cognitive decline.<sup>9</sup> The Neuropsychiatric Interview<sup>10</sup> was positive for depression and anxiety, and Geriatric Depression Scale

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(GDS) (30 items) score was 10.<sup>11</sup> He was fully independent with scores of 6/6 on ADL, and 8/8 on IADL.

After he was homebound for 6 weeks due to the COVID-19 restrictions, his girlfriend noticed worsening in his mood, sleep, memory, and function. A remote visit over telephone was arranged per the COVID-19 clinical policies of the Department of Veterans Affairs with the memory disorders clinic to assess and manage his situation. The patient and his girlfriend were initially interviewed separately and later together by the memory clinic team consisting of a geriatrician, a neuropsychology technician, and a geriatric psychiatrist. There were no medical problems or psychosocial stressors noted in the interim.

Patient's girlfriend reported that he was depressed due to COVID-19 as he could not go out. She noted that he had difficulty sleeping, balancing his checkbook, and that his apartment was cluttered. His social interactions were limited to his girlfriend, as she urged him stay home to avoid exposure. She did all his grocery shopping due to fear of him contracting COVID-19. On questioning for depression, he reported new-found symptoms of helplessness, worthlessness, feeling the future was bleak, indecisiveness, not enjoying getting up in the morning, and avoided social gatherings. He was previously very active with his book publishing community and reported he was avoiding them lately. He did not connect with them as he did before. He described worsening irritability, anxiety, and sleep in the context of the COVID-19 pandemic. He also reported declining memory and heightened relationship strain. He reported frustration regarding his inability to focus and constant preoccupation with news-updates about COVID-19. He was particularly distressed that he had to depend on his girlfriend for grocery shopping. He was also quite concerned about his children and grandchildren getting exposed to COVID-19. All assessments done at baseline not requiring the use of paper and pencil to complete, were repeated over the phone after 6 weeks of COVID restrictions. A repeat GDS over the phone was 21/30 compared to the baseline score of 10. Epworth Sleepiness Scale score worsened to 8 from the baseline score of 6.<sup>12</sup> Despite the report of worsening in memory, his score on the NYU-PRT did not change.

The treatment team recommended use of trazodone for insomnia, monthly mental health appointments via phone and the use of technology to mitigate loneliness in this patient as technological interventions are proven to be effective to combat loneliness.<sup>13</sup> It is known that social networks mitigate the detrimental effects of loneliness by enhancing physical and mental health. His girlfriend was successful in establishing connections with his grandchildren with whom he enjoyed talking over the phone. He also connected with his girlfriend and family members over FaceTime and Zoom calls. Another important factor was loss of physical activity as he used to jog for 3 miles daily at baseline. He was afraid of using a treadmill due to fear of loss of balance. Although home exercise programs that include strength, balance, and aerobic exercise are ideal during COVID-19 restrictions, timed walking in his own backyard was encouraged in this patient.

Behavioral, cognitive, and functional decline may be associated with COVID-19 stay-home guidance among older adults and is a pressing problem. Similar to our patient, others have found that patients with MCI living alone are particularly prone for negative psychological effects and sleeping problems.<sup>14</sup> Approximately 15% to 20% of people age 65 years or older have MCI and about a third of them live alone.<sup>15,16</sup> Routine screening for loneliness and psychological distress at health-care visits is important in this cohort.<sup>17</sup> Assessing the strength of social connections could give valuable information. Relying on only one person as reported in this case may be a red flag for increased caregiver burden especially in the context of prolonged physical distancing. A reliable source of collateral history is important in older adults especially with cognitive impairment to obtain accurate information about cognitive and functional decline and to titrate the frequency of interventions. Developing social connections using technology and regular counseling could be a potential solution to the COVID-19 stay-home guidance in older adults.<sup>13,17</sup>

### Abbreviations

ADLs	Activities of Daily Living
COVID-19	Corona virus disease
GDS	Geriatric Depression Scale
IADLs	Instrumental Activities of Daily Living
MCI	Mild Cognitive Impairment
MMSE	Modified Mini-Mental State Examination
NYU-PRT	New York University Paragraph Immediate and Delayed Recall Test

### Authors' Note

All authors have contributed significantly to the paper and approve the final version. Detailed author contributions are as follows: Kalpana Padala: conceptualization, facilitating participant interview, and writing and review of the manuscript; Christopher Parkes: facilitating participant interview and critical review of the manuscript; Prasad Padala: consenting and conducting the interview and critical review of the manuscript.


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## References

1. Morlett Paredes A, Lee EE, Chik L, et al. Qualitative study of loneliness in a senior housing community: the importance of wisdom and other coping strategies. *Aging Ment Health*. 2020;1-8.
2. Brooks SK, Webster RK, Smith LE, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet*. 2020;395(10227):912-920.
3. Lima CKT, Carvalho PMM, Lima I, et al. The emotional impact of Coronavirus 2019-nCoV (new Coronavirus disease). *Psychiatry Res*. 2020;287:112915.
4. Wang C, Pan R, Wan X, et al. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *Int J Environ Res Public Health*. 2020;17(5):1729.
5. Mazza C, Ricci E, Biondi S, et al. A nationwide survey of psychological distress among Italian people during the COVID-19 pandemic: immediate psychological responses and associated factors. *Int J Environ Res Public Health*. 2020;17(9):3165.
6. Katz S, Ford AB, Moskowitz RW, Jackson BA, Jaffe MW. Studies of illness in the aged. The index of ADL: a standardized measure of biological and psychosocial function. *JAMA*. 1963;185:914-919.
7. Lawton MP, Brody EM. Assessment of older people: self-maintaining and instrumental activities of daily living. *Gerontologist*. 1969;9(3):179-186.
8. McDowell I, Kristjansson B, Hill GB, Hébert R. Community screening for dementia: the Mini Mental State Exam (MMSE) and Modified Mini-Mental State Exam (3MS) compared. *J Clin Epidemiol*. 1997;50(4):377-383.
9. Mathews M, Abner E, Caban-Holt A, et al. Quality of education and memory test performance in older men: the New York university paragraph recall test normative data. *Curr Alzheimer Res*. 2013;10(7):776-783.
10. Cummings JL, Mega M, Gray K, Rosenberg-Thompson S, Carusi DA, Gornbein J. The neuropsychiatric inventory: comprehensive assessment of psychopathology in dementia. *Neurology*. 1994;44(12):2308-2314.
11. Yesavage JA, Brink TL, Rose TL, et al. Development and validation of a geriatric depression screening scale: a preliminary report. *J Psychiatr Res*. 1982;17(1):37-49.
12. Johns MW. A new method for measuring daytime sleepiness: the Epworth Sleepiness Scale. *Sleep*. 1991;14(6):540-545. doi:10.1093/sleep/14.6.540
13. Jeste DV, Lee EE, Cacioppo S. Battling the modern behavioral epidemic of loneliness: suggestions for research and interventions [published online March 4, 2020]. *JAMA Psychiatry*. 2020.
14. Goodman-Casanova JM, Dura-Perez E, Guzman-Parra J, Cuesta-Vargas A, Mayoral-Cleries F. Telehealth home support during COVID-19 confinement for community-dwelling older adults with mild cognitive impairment or mild dementia: survey study. *J Med Internet Res*. 2020;22(5):e19434.
15. Accessed August 24, 2020. [https://www.alz.org/alzheimers-dementia/what-is-dementia/related\\_conditions/mild-cognitive-impairment](https://www.alz.org/alzheimers-dementia/what-is-dementia/related_conditions/mild-cognitive-impairment).
16. Amjad H, Roth DL, Samus QM, Yasar S, Wolff JL. Potentially unsafe activities and living conditions of older adults with dementia. *J Am Geriatr Soc*. 2016;64(6):1223-1232.
17. Cudjoe TKM, Kotwal AA. "Social distancing" amid a crisis in social isolation and loneliness. *J Am Geriatr Soc*. 2020;68(6):E27-E29.