

Predicting Cognitive Impairment in Long-COVID Patients: A Demographic and Comorbid Analysis using BrainCheck Cognitive Assessment

Camden Bohn¹, Jason Li¹, Noah Todd¹, Jessica Pater², Jeanne Carroll³, Brian Henriksen¹, Fen-Lei Chang^{1,3}

¹Indiana University School of Medicine; ²Parkview Health; ³Parkview Health Post-COVID Clinic

Abstract

Background

Coronavirus disease (COVID-19) was declared a global pandemic by the World Health Organization (WHO) on March 11, 2020. Now a subset of individuals are experiencing post-acute sequelae of COVID-19, more colloquially known as Long-COVID. Research surrounding the long-term consequences of COVID-19 is now at the height of importance as approximately 5.8% of individuals will be diagnosed with new psychiatric illnesses. Mind long consequences of COVID-19 include brain fog, difficulties with memory, and focusing.

Objective/Methods

While many of the symptoms associated with Long-COVID have been summarized, the cognitive impairment that takes place was quantified in this study using BrainCheck cognitive assessment. The aim of this study was to utilize a database of over 500 individuals suffering from Long-COVID symptoms and analyze differing levels of cognitive impairment to find correlations with different predispositions and demographics. The focused variables were age, gender, weight, (body mass index) BMI, and hospitalization status. A retrospective chart review was conducted on subjects' data that was included in the Parkview Post-COVID Clinic (PPCC) registry database.

Results

The data analysis showed that age was correlated with mental flexibility (p-value = <.001, correlation = 0.31), and executive functioning. The extremes of BMI were associated with impaired mental flexibility (chi-squared = 14.00, p-value = <.001). Finally, hospitalization status at the onset of COVID-19 infection had correlations with impaired short-term memory recognition (p-value = <.05, correlation = 0.17).

Conclusion

This research project was undertaken to gain a better understanding of the cognitive deterioration that takes place because of COVID-19's effect on the central nervous system. Furthermore, this research is intended to help predict the levels of cognitive impairment that clinicians can expect for their patients when presenting with Long-COVID symptoms, and spark future research on the neurological implications of COVID-19.