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LONG-COVID AND DECLARATIVE MEMORY

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Introduction

Although COVID-19 patients present primarily with symptoms of respiratory disease, SARS-CoV-2 induced impairment of multiple organ functions, and it is common the presence of neurological symptoms. Weeks or months after acute COVID-19, around 10-20% of infected with SARS-CoV2 experience various symptoms, including cognitive impairment. Mainly, impairments in memory, executive function, and language are present in up to 70% of people with the post-COVID syndrome (PCS).

Our objective was to explore declarative memory in a sample of individuals affected by PCS and to compare it with a sample of healthy controls.

Methods

Preliminary data from the Nautilus Project (*ClinicalTrials.gov* IDs: NCT05307549 and NCT05307575) were analyzed. The sample consist of 196 participants (N=118; 60.20% female) with PCS (according to NICE) recruited from Neuropsychology and COVID Units from 17 Hospitals in Catalonia, Madrid, Galicia and Andorra (mean age= 48.06, SD= 9.11; mean years of education= 13.57, SD= 3.13; mean days from acute disease= 310.85, SD= 127.58) and 52 healthy control participants (N=37; 71% female) selected from non-healthcare community settings (mean age=46.63, SD= 9.72; mean years of education= 15.10, SD= 3.08).

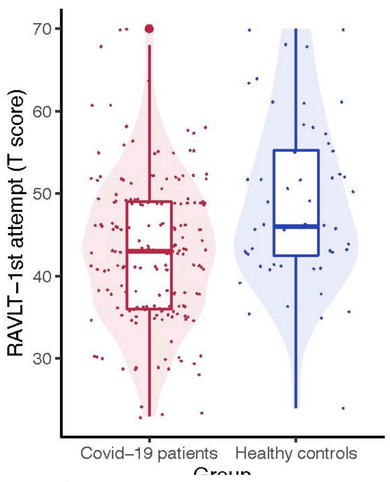
Declarative memory was assessed by Rey Auditory Verbal Learning Test (RAVLT) (first attempt, delayed recall and recognition); The Rey–Osterrieth Complex Figure Test (ROCF) (immediate recall, delayed recall, and recognition) and semantic fluency (animals). We used the direct score from the Vocabulary subtest of the WAIS-IV to measure premorbid intelligence. The alpha level was set at p=.05. Statistical analyses were performed in IBM SPSS Statistics 27 and R.

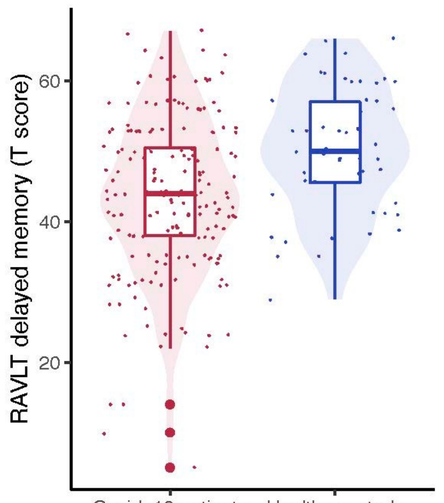
Results

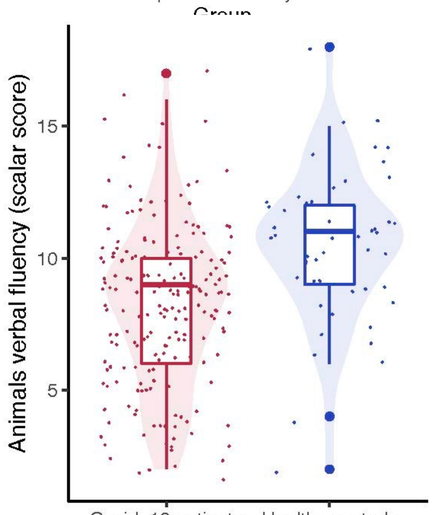
The groups were equivalent in age and sex, but not in years of education and in the Vocabulary subtest score. An ANCOVA was run to determine the effect of the COVID-19 disease on declarative memory variables after controlling for years of education and vocabulary score. After this adjustment, there was a statistically significant difference in RAVLT-1st attempt, $F(1, 226) = 7.003$, $p = .009$, partial $\eta^2 = .030$; RAVLT- delayed memory, $F(1, 226) = 8.895$, $p = .003$, partial $\eta^2 = .038$ and Semantic fluency, $F(1, 235) = 10.583$, $p = .001$, partial $\eta^2 = .043$, between PCS and health control group.

	Post-Covid Syndrome		Healthy Control				
	N	M (SD)	N	M (SD)	t	P	d
Age	196	48.03 (9.08)	52	46.52 (9.65)	1.020	.309	.164
Years of education	189	13.58 (3.17)	51	15.10 (3.08)	-3.049	.003	.481
Vocabulary (scalar score)	195	11.07 (3.81)	52	13.81 (3.64)	-4.761	<.001	.411
	N	n (%)	N	n (%)	X^2	p	
Sex (female)	196	118 (60.2)	52	37 (71)	2.102	.098	

	COVID-19		Healthy Control	
	N	Adjusted M (SE)	N	Adjusted M (SE)
RAVLT 1st attempt (typical score)	179	43.514 (.671)	51	47.496 (1.451)
RAVLT delayed memory (typical score)	179	43.635 (.787)	51	49.257 (1.703)
Animals verbal fluency (scalar score)	188	8.328 (.215)	51	9.888 (.476)







Conclusions

From our results, it can be deduced that the group of participants with PCS presents an alteration of episodic and semantic memory about a year after passing the disease. Additional analyzes of the project data are needed to elucidate more factors involved in the impaired memory of PCS.

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