Long Neurocognitive and Neuropsychiatric Sequelae in participants with post-COVID-19 infection: A longitudinal study
Supplementary Materials

Supplementary Tables

Table S1. Neuropsychological results for Group 0 (No-No patients; n=54)

Neuropsychological Tests	Basal Mean (SD)	6 months Mean (SD)	Sig. (2-tailed)	d Cohen	Effect (r)	Mean T Note 6 months (SD)
TAVEC-1	6.35 (1.58)	7.67 (1.89)	0.001*	0.75	0.35	51.50 (8.85)
TAVECTotal	54.09 (8.12)	58.80 (8.32)	0.001*	0.57	0.27	58.80 (8.32)
TAVEC-B	5.02 (1.42)	5.26 (1.76)	0.336	0.15	0.07	45.00 (8.41)
TAVEC-IMR	11.39 (2.43)	12.70 (2.56)	0.001*	0.52	0.25	56.66 (9.31)
TAVEC-IMRSC	12.56 (2.43)	13.63 (2.27)	0.001*	0.43	0.21	56.48 (9.93)
TAVEC-DFR	12.15 (2.69)	13.15 (2.49)	0.002*	0.38	0.18	56.29 (9.57)
TAVEC-DFRSC	12.69 (2.57)	13.62 (2.24)	0.001*	0.38	0.18	56.11 (9.79)
TAVEC-REC	15.07 (1.33)	15.46 (1.04)	0.039*	0.32	0.16	56.22 (5.62)
WMS-IMR	35.78 (5.77)	37.78 (4.55)	0.001*	0.38	0.18	50.84 (5.71)
WMS-DFR	29.94 (9.10)	32.87 (8.01)	0.001*	0.34	0.16	53.10 (6.15)
Digits Forward	6.04 (1.19)	6.22 (1.14)	0.142	0.15	0.07	50.02 (6.58)
Digits Backward	4.48 (1.12)	4.63 (0.95)	0.289	0.14	0.07	49.35 (5.43)
Letter&Number	10.22 (2.40)	10.33 (2.23)	0.585	0.04	0.02	47.63 (6.64)
TMT-A	34.09 (11.99)	31.28 (12.93)	0.004*	0.22	0.11	49.58 (9.00)
TMT-B	90.58 (51.14)	80.02 (41.02)	0.002*	1.00	0.66	46.32 (7.57)
SDMT	45.07 (11.55)	46.65 (12.37)	0.029*	0.13	0.06	45.41 (7.10)
Stroop Lecture	103.49 (16.79)	101.06 (19.12)	0.054	0.13	0.06	45.42 (7.35)
Stroop Color	67.79 (12.80)	67.15 (12.98)	0.462	0.04	0.02	45.09 (7.03)
Stroop Int.	40.63 (11.99)	40.44 (11.62)	0.754	0.01	0.00	44.51 (9.41)
Semantic Fluency	24.44 (5.59)	25.81 (6.21)	0.026*	0.02	0.11	51.01 (7.65)
Phonetic Fluency	14.93 (4.55)	15.80 (4.89)	0.082	0.18	0.09	45.60 (6.60)
FCRO copy	33.25 (4.66)	33.45 (3.63)	0.063	0.04	0.02	53.47 (9.42)
BNT	51.46 (6.59)	52.43 (6.54)	0.002*	0.14	0.07	49.75 (9.08)
HAD Anxiety	5.37 (3.42)	5.24 (3.67)	0.404	0.03	0.01	
HAD Depresion	3.11 (2.95)	3.31 (3.24)	0.347	0.06	0.03	

Abbreviations: TAVEC-1, Test de Aprendizaje Verbal España Complutense learning 1; TAVECTotal, Test de Aprendizaje Verbal España Complutense sum of learning; TAVEC-B, Test de Aprendizaje Verbal España Complutense learning B; TAVEC-IMR, Test de Aprendizaje Verbal España Complutense Immediate Recall; TAVEC-IMRSC, Test de Aprendizaje Verbal España Complutense Immediate Recall Semantic Clue; TAVEC-DFR, Test de Aprendizaje Verbal España Complutense Deferred Free Recall; TAVEC-DFRSC, Test de Aprendizaje Verbal España Complutense Deferred Free Recall Semantic Clue; TAVEC-REC, Test de Aprendizaje Verbal España Complutense Recognition; WMS-IMR, Visual Reproduction of the Wechsler Memory Scale—IV Immediate Recall; WMS-DFR, Visual Reproduction of the Wechsler Memory Scale—IV Deferred Free Recall; TMT-A, Trail-Making Test A; TMT-B, Trail-Making Test B; SDMT, Symbol Digit Modalities Test; FCRO, Complex Figure of Rey-Osterrieth; HAD, Hospital Anxiety and Depression scale; SD, standard deviation; * Test with significant *p* value.

Table S2. Neuropsychological results for Group 1 (Yes-No patients; n = 16)

Neuropsychological Tests	Basal Mean (SD)	6 months Mean (SD)	Sig. (2-tailed)	d Cohen	Effect (r)	Mean T Note 6 months (SD)
TAVEC-1	6.20 (1.69)	8.07 (1.79)	0.006*	1.00	0.47	54.00 (9.85)
TAVECTotal	53.53 (8.15)	59.20 (7.79)	0.010*	0.71	0.33	59.20 (7.79)
TAVEC-B	5.80 (2.07)	6.20 (1.37)	0.373	0.22	0.11	48.00 (8.61)
TAVEC-IMR	11.40 (2.32)	12.67 (2.25)	0.022*	0.55	0.26′	56.00 (9.10)
TAVEC-IMRSC	12.40 (1.88)	13.80 (2.39)	0.018*	0.65	0.30	58.00 (8.61)
TAVEC-DFR	11.27 (2.31)	13.20 (2.04)	0.001*	0.88	0.40	55.33 (8.33)
TAVEC-DFRSC	12.40 (1.92)	13.87 (2.03)	0.008*	0.74	0.34	56.00 (9.10)
TAVEC-REC	15.00 (1.36)	15.47 (0.74)	0.187	0.42	0.20	56.00 (5.07)
WMS-IMR	34.60 (6.41)	35.47 (6.15)	0.474	0.13	0.06	46.66 (8.94)
WMS-DFR	27.33 (10.08)	30.67 (7.51)	0.183	0.37	0.18	49.83 (8.31)
Digits Forward	5.73 (1.28)	5.87 (1.18)	0.499	0.11	0.05	46.83 (7.22)
Digits Backward	4.20 (1.20)	6.33 (6.64)	0.235	0.44	0.21	47.50 (7.07)
Letter&Number	9.73 (2.46)	9.60 (2.32)	0.685	0.05	0.02	44.16 (6.52)
TMT-A	37.27 (12.07)	33.20 (8.57)	0.133	0.38	0.19	44.33 (6.01)
TMT-B	99.00 (79.48)	86.20 (49.03)	0.248	0.19	0.09	39.26 (11.65)
SDMT	44.20 (10.33)	47.47 (9.73)	0.015*	0.32	0.16	43.33 (7.17)
Stroop Lecture	109.33 (18.42)	110.80 (17.03)	0.254	0.08	0.04	47.83 (8.49)
Stroop Color	65.93 (9.53)	67.93 (9.32)	0.192	0.21	0.10	43.66 (5.96)
Stroop Int.	38.00 (12.03)	40.39 (10.30)	0.101	0.21	0.10	43.83 (7.37)
Semantic Fluency	22.53 (6.97)	22.60 (6.03)	0.964	0.01	0.00	45.20 (8.64)
Phonetic Fluency	13.27 (4.84)	14.60 (3.94)	0.126	0.30	0.14	42.33 (6.71)
FCRO copy	33.23 (4.27)	32.50 (5.25)	0.380	0.15	0.07	51.50 (9.76)
BNT	48.07 (7.32)	50.13 (7.41)	0.003*	0.27	0.13	44.33 (8.78)
HAD Anxiety	10.27 (3.28)	7.33 (2.12)	0.004*	1.00	0.46	
HAD Depresion	7.07 (3.41)	4.20 (2.93)	0.016*	0.90	0.41	

Abbreviations: TAVEC-1, Test de Aprendizaje Verbal España-Complutense learning 1; TAVECTotal, Test de Aprendizaje Verbal España-Complutense sum of learning; TAVEC-B, Test de Aprendizaje Verbal España-Complutense learning B; TAVEC-IMR, Test de Aprendizaje Verbal España-Complutense Immediate Recall; TAVEC-IMRSC, Test de Aprendizaje Verbal España-Complutense Immediate Recall Semantic Clue; TAVEC-DFR, Test de Aprendizaje Verbal España-Complutense Deferred Free Recall; TAVEC-DFRSC, Test de Aprendizaje Verbal España-Complutense Deferred Free Recall Semantic Clue; TAVEC-REC, Test de Aprendizaje Verbal España-Complutense Recognition; WMS-IMR, Visual Reproduction of the Wechsler Memory Scale –IV Immediate Recall; WMS-DFR, Visual Reproduction of the Wechsler Memory Scale –IV Deferred Free Recall; Int, Intereference; TMT-A, Trail Making Test A; TMT-B, Trail Making Test B; SDMT, Symbol Digit Modalities Test; FCRO, Complex Figure of Rey-Osterrieth; BNT, Boston Naming Test; HAD, Hospital Anxiety and Depression scale; SD, standard deviation. * Test with significant p value.

Table S3. Neuropsychological results for Group 2 (No-Yes patients; *n* = 16)

Neuropsychological Tests	Basal Mean (SD)	6 months Mean (SD)	Sig. (2-tailed)	d Cohen	Effect (r)	Mean T Note 6 months (SD)
TAVEC-1	6.69 (2.62)	6.63 (1.50)	0.916	0.02	0.01	47.50 (7.74)
TAVECTotal	48.56 (12.07)	49.13 (12.25)	0.841	0.04	0.02	49.13 (12.25)
TAVEC-B	4.88 (1.74)	4.63 (1.36)	0.580	0.16	0.07	43.12 (7.04)
TAVEC-IMR	9.81 (3.10)	9.75 (2.88)	0.931	0.02	0.01	45.00 (9.66)
TAVEC-IMRSC	10.50 (2.75)	11.50 (3.36)	0.269	0.32	0.16	49.37 (12.36)
TAVEC-DFR	10.38 (3.75)	9.94 (4.05)	0.704	0.11	0.05	46.00 (14.04)
TAVEC-DFRSC	10.38 (3.00)	11.31 (3.47)	0.398	0.28	0.14	48.66 (12.45)
TAVEC-REC	14.63 (1.31)	14.56 (2.44)	0.936	0.03	0.01	55.00 (5.18)
WMS-IMR	33.81 (6.51)	34.88 (5.16)	0.435	0.18	0.09	47.50 (5.08)
WMS-DFR	27.50 (8.30)	27.38 (8.67)	0.956	0.01	0.00	49.06 (5.97)
Digits Forward	5.56 (1.26)	5.31 (1.40)	0.232	0.18	0.09	50.62 (6.55)
Digits Backward	4.13 (1.25)	4.50 (1.36)	0.849	0.28	0.14	44.53 (4.84)
Letter&Number	8.44 (2.42)	8.38 (2.21)	0.952	0.02	0.01	45.93 (6.44)
TMT-A	44.75 (26.76)	44.50 (28.19)	0.358	0.00	0.00	41.56 (5.76)
TMT-B	109.13 (63.11)	124.67 (77.17)	1.000	0.22	0.10	42.81 (4.81)
SDMT	37.38 (12.15)	37.38 (13.09)	0.086	0.00	0.00	41.25 (5.91)
Stroop Lecture	94.94 (24.42)	83.69 (23.80)	0.118	0.46	0.22	40.96 (6.01)
Stroop Color	61.38 (12.53)	55.88 (14.15)	0.111	0.41	0.20	42.65 (5.80)
Stroop Int.	36.00 (9.38)	32.31 (11.03)	0.727	0.36	0.17	45.62 (7.98)
Semantic Fluency	21.06 (6.28)	20.56 (5.86)	0.531	0.08	0.04	43.43 (7.23)
Phonetic Fluency	13.63 (4.99)	12.94 (4.80)	0.531	0.14	0.07	43.43 (7.23)
FCRO copy	32.71 (3.82)	33.00 (3.69)	0.669	0.07	0.03	53.28 (9.2)
BNT	50.75 (6.44)	51.50 (5.06)	0.449	0.12	0.06	49.21 (6.75)
HAD Anxiety	7.63 (3.48)	9.69 (4.71)	0.007*	0.49	0.24	
HAD Depresion	5.19 (3.06)	6.75 (5.06)	0.197	0.37	0.18	

Abbreviations: TAVEC-1, Test de Aprendizaje Verbal España-Complutense learning 1; TAVECTotal, Test de Aprendizaje Verbal España-Complutense sum of learning; TAVEC-B, Test de Aprendizaje Verbal España-Complutense learning B; TAVEC-IMR, Test de Aprendizaje Verbal España-Complutense Immediate Recall; TAVEC-IMRSC, Test de Aprendizaje Verbal España-Complutense Immediate Recall Semantic Clue; TAVEC-DFR, Test de Aprendizaje Verbal España-Complutense Deferred Free Recall; TAVEC-DFRSC, Test de Aprendizaje Verbal España-Complutense Deferred Free Recall Semantic Clue; TAVEC-REC, Test de Aprendizaje Verbal España-Complutense Recognition; WMS-IMR, Visual Reproduction of the Wechsler Memory Scale –IV Immediate Recall; WMS-DFR, Visual Reproduction of the Wechsler Memory Scale –IV Deferred Free Recall; Int, Intereference; TMT-A, Trail Making Test A; TMT-B, Trail Making Test B; SDMT, Symbol Digit Modalities Test; FCRO, Complex Figure of Rey-Osterrieth; BNT, Boston Naming Test; HAD, Hospital Anxiety and Depression scale; SD, standard deviation. * Test with significant *p* value.

Table S4. Neuropsychological results for Group 3 (Yes-Yes patients; *n*=22).

Neuropshycological Tests	Basal Mean (SD)	6 months Mean (SD)	Sig. (2-tailed)	d Cohen	Effect (r)	Mean T note 6 months (SD)
TAVEC-1	6.32 (1.61)	7.83 (2.05)	0.001*	0.81	0.37	52.27 (10.66)
TAVECTotal	53.86 (7.46)	57.59 (8.93)	0.007*	0.45	0.22	57.59 (8.93)
TAVEC-B	5.86 (1.58)	6.18 (1.29)	0.348	0.22	0.11	48.63 (6.39)
TAVEC-IMR	11.23 (2.68)	12.55 (2.72)	0.001*	0.48	0.23	53.63 (10.02)
TAVEC-IMRSC	12.27 (2.33)	13.32 (2.07)	0.006*	0.47	0.23	54.54 (8.57)
TAVEC-DFR	11.91 (2.65)	12.45 (2.65)	0.049*	0.20	0.10	52.27 (10.66)
TAVEC-DFRSC	12.41 (2.55)	13.32 (2.12)	0.008*	0.38	0.19	54.09 (9.08)
TAVEC-REC	15.00 (1.15)	14.95 (0.99)	0.803	0.04	0.02	50.90 (9.21)
WMS-IMR	32.86 (5.48)	34.41 (6.40)	0.047*	0.26	0.12	46.13 (8.88)
WMS-DFR	24.23 (7.94)	30.18 (8.19)	0.001*	0.73	0.34	50.45 (6.97)
Digits Forward	5.50 (0.80)	5.41 (1.05)	0.665	0.09	0.04	44.77 (6.72)
Digits Backward	4.09 (0.97)	4.45 (0.85)	0.104	0.39	0.19	48.29 (5.84)
Letter&Number	8.86 (2.14)	9.55 (2.36)	0.052	0.30	0.15	46.02 (6.10)
TMT-A	35.73 (11.26)	39.91 (17.80)	0.167	0.28	0.13	44.88 (9.92)
TMT-B	107.85 (69.38)	87.60 (37.66)	0.090	0.36	0.17	43.37 (8.24)
SDMT	39.09 (11.09)	42.95 (11.87)	0.008*	0.33	0.16	43.29 (6.51)
Stroop Lecture	91.32 (14.58)	89.73 (16.71)	0.315	0.10	0.05	40.11 (6.96)
Stroop Color	64.45 (8.08)	63.45 (9.68)	0.385	0.11	0.05	42.61 (6.29)
Stroop Int.	37.32 (7.27)	37.73 (8.03)	0.709	0.05	0.02	43.29 (7.29)
Semantic Fluency	22.18 (4.65)	22.23 (5.87)	0.963	0.00	0.00	46.81 (7.56)
Phonetic Fluency	13.05 (3.30)	14.86 (3.93)	0.049*	0.49	0.24	44.43 (6.12)
FCRO copy	32.47 (3.13)	32.18 (4.55)	0.611	0.07	0.03	51.00 (10.52)
BNT	49.05 (5.99)	50.64 (6.23)	0.009*	0.26	0.12	46.68 (9.04)
HAD Anxiety	10.59 (4.02)	11.41 (3.80)	0.373	0.20	0.10	
HAD Depresion	8.68 (3.74)	8.86 (4.00)	0.757	0.04	0.02	

Abbreviations: TAVEC-1, Test de Aprendizaje Verbal España-Complutense learning 1; TAVECTotal, Test de Aprendizaje Verbal España-Complutense sum of learning; TAVEC-B, Test de Aprendizaje Verbal España-Complutense learning B; TAVEC-IMR, Test de Aprendizaje Verbal España-Complutense Immediate Recall; TAVEC-IMRSC, Test de Aprendizaje Verbal España-Complutense Immediate Recall Semantic Clue; TAVEC-DFR, Test de Aprendizaje Verbal España-Complutense Deferred Free Recall; TAVEC-DFRSC, Test de Aprendizaje Verbal España-Complutense Deferred Free Recall Semantic Clue; TAVEC-REC, Test de Aprendizaje Verbal España-Complutense Recognition; WMS-IMR, Visual Reproduction of the Wechsler Memory Scale –IV Immediate Recall; WMS-DFR, Visual Reproduction of the Wechsler Memory Scale –IV Deferred Free Recall; Int, Intereference; TMT-A, Trail Making Test A; TMT-B, Trail Making Test B; SDMT, Symbol Digit Modalities Test; FCRO, Complex Figure of Rey-Osterrieth; BNT, Boston Naming Test; HAD, Hospital Anxiety and Depression scale; SD, standard deviation. * Test with significant *p* value.

Table S5. Neurocognitive subtests with differences in neuropsychological

performance by four subgroups were defined based on the transition between

baseline assessment and the 6-month follow-up.

NPS Tests	ANOVA F	Group 0-1 (sig).	Group 0-2 (sig.)	Group 0-3 (sig.)	Group 1-2 (sig.)	Group 1-3 (sig.)	Group 2-3 (sig.)
TAVEC Total	5.05	-	0.004	-	0.027	-	-
TAVEC-IMR	5.67	-	0.002	-	0.025	-	0.017
TAVEC-IMRSC	3.42	-	0.002	-	-	-	-
TAVEC-DFR	5.93	-	0.001	-	-	-	-
TAVEC-DFRSC	4.43	-	0.009	-	0.039	-	-
Letter&Numbers	3.22	-	0.003	-	-	-	-
TMT-B	5.11	-	0.003	-	-	-	0.048
Stroop Lecture	6.99	-	0.002	-	0.002	0.016	-
Stroop Color	3.98	-	0.001	-	-	-	-
Semantic F.	4.18	-	0.003	-	-	-	-
HAD Anxiety	16.72	-	0.001	0.001	-	0.016	-
HAD Depresion	13.23	-	0.017	0.001	-	0.004	-

Abbreviations: TavecTotal, Test de Aprendizaje Verbal España-Complutense sum of learning; TAVEC-IMR, Test de Aprendizaje Verbal España-Complutense Immediate Recall; TAVEC-IMRSC, Test de Aprendizaje Verbal España-Complutense Immediate Recall Semantic Clue; TAVEC-DFR, Test de Aprendizaje Verbal España-Complutense Deferred Free Recall; TAVEC-DFRSC, Test de Aprendizaje Verbal España-Complutense Deferred Free Recall Semantic Clue; TMT-B, Trail Making Test B; F, fluency; HAD, Hospital Anxiety and Depression scale; NPS, Neuropsychological.

Table S6. Association between persistent symptoms and cognitive complaints

	Without Persistent Symptoms	With Persistent Symptoms
Group 0 (No-No)	n = 39 (72.2%)	n = 15 (27.8%)
Group 1 (Yes-No)	n = 12 (75%)	n = 4 (25%)
Group 2 (No-Yes)	n = 4 (25%)	n = 12 (75%)
Group 3 (Yes-Yes)	n = 5 (22.7%)	n = 17 (77.3%)