

Clinical efficacy of Cognitive Stimulation in aged subjects with mild and moderate cognitive impairment: a telemedicine experience

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Background

Telerehabilitation (TR) is the provision of rehabilitation services to patients at a remote location using information and communication technologies (Brennan et al., 2009). In this study, a cognitive stimulation (CS) was delivered by means of TR to a sample of Parkinson's Disease (PD) and chronic stroke patients, with mild to moderate cognitive impairment. The main objective was to verify the effectiveness of TR CS compared with conventional rehabilitation. Secondary objective was to assess if the remote delivering of the CS could improve the cognitive performance, mood and Activities of Daily Living.

Materials and Methods

Enrolment criteria: Mini Mental State Examination between 18-24; Clinical Dementia Rating Scale from 0.5-1. Sample: until October 2022, 15 stroke patients (8m/7f; mean age: 58.1yrs), and 15 PD patients (11m/4 f; mean age: 66 yrs).

The system consists of a telecockpit and home workstations (VRRS, Khymeia). CS was delivered for 1 hour/day, 5 times/week, for 4 consecutive weeks. The Cognitive Module enables activities related to the treatment of neurological disorders afferent to the cognitive sphere. All exercises are clinically validated and organized by cognitive domain: memory; attention; praxis; mathematics.

Clinical assessments were administered blinded, before and after treatments.

Cognitive assessment: geometric drawing copying test with and without programming elements; Trail Making Test (TMT); noun and verb naming; Digits Forward and Digits Backward; 15 Rey words.

Mood and quality of life assessment: Beck Depression Inventory-II (BDI); State-Trait Anxiety Inventory Form X1-2; Short Form-36 Health Survey; for family member, Caregiver Burden Inventory (CBI).

Results

Preliminary results in both groups of patients showed improvement in cognitive performance and mood after the TR protocol administration. Specifically, the improvements were observed in a constructive praxis task from programming items; learning of short- and long-term memory of verbal information; visual attention and task change. Regarding patients' mood and the stress of the caregiver bearing the burden of the patient, there was evidence of a significant decrease in the severity of the subjects' mood status (BDI: p.038; CBI: p.002). In addition, in the PD groups there is a significant difference in the TMT (p. 0.029), showing improvement in visual attention, task switching, and executive functions.

Conclusions

The role that CS plays in stroke and PD patients was highlighted, suggesting that cognitive training may also optimize cognitive functioning. This is the first experience made by a well-

defined TR tool, in an Italian low-income region (Calabria), which is characterized by a paucity of specialized rehabilitation services.

Bibliography

Brennan D, Mawson S, Brownsell S. Telerehabilitation: enabling the remote delivery of healthcare, rehabilitation and self-management. In: Gaggioli A editor(s). *Advanced Techno in Rehab* Amsterdam: IOS Press, 2009; 231–48

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