

Development & Standardization of a Literacy Free Cognitive Rehabilitation Program for Patients Post Traumatic Brain Injury

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Abstract : Background: Cognitive rehabilitation aims to retrain brain injured individuals with cognitive deficits to restore or compensate lost functions. As illiterates or people with low literacy levels represent a significant proportion of the world, specific rehabilitation modules for such populations are indispensable. Literacy is significantly associated with all neuropsychological measures and retraining programs widely use written or spoken techniques which essentially require the patient to read or write. So, the aim of the study was to develop and standardize a literacy free neuropsychological rehabilitation program for improving cognitive functioning in patients with mild and moderate Traumatic Brain Injury (TBI). Several studies have pointed out to the impairments seen in memory, executive functioning, and attention and concentration post-TBI, so the rehabilitation program focussed on these domains. Visual item memorization, stick constructions, symbol cancellations, and colouring techniques were used to construct the retraining program. Methodology: The development of the program consisted of planning, preparing, analyzing, and revising the different modules. The construction focussed on areas of retraining immediate and delayed visual memory, planning ability, focused and divided attention, concentration, and response inhibition (to control irritability and aggression). A total of 98 home based retraining modules were prepared in the 4 domains (42 for memory, 42 for executive functioning, 7 for attention and concentration, and 7 for response inhibition). The standardization was done on 20 healthy controls to review, select and edit items. For each module, the time, errors made and errors per second were noted down, to establish the difficulty level of each module and were arranged in increasing level of difficulty over a period of 6 weeks. The retraining tasks were then administered on 11 brain injured individuals (5 after Mild TBI and 6 after Moderate TBI). These patients were referred from the Trauma Centre to Clinical Neuropsychology OPD, All India Institute of Medical Sciences, New Delhi, India. Results: The time was taken, errors made and errors per second were analysed for all domains. Education levels were divided into illiterates, up to 10 years, 10 years to graduation and graduation and above. Mean and standard deviations were calculated. Between group and within group analysis was done using the t-test. The performance of 20 healthy controls was analyzed and only a significant difference was observed on the time taken for the attention tasks and all other domains had non-significant differences in performance between different education levels. Comparing the errors, time taken between patient and control group, there was a significant difference in all the domains at the 0.01 level except the errors made on executive functioning, indicating that the tool can successfully differentiate between healthy controls and patient groups. Conclusions: Apart from the time taken for symbol cancellations, the entire cognitive rehabilitation program is literacy free. As it taps the major areas of impairment post-TBI, it could be a useful tool to rehabilitate the patient population with low literacy levels across the world. The next step is already underway to test its efficacy in improving cognitive functioning in a randomized clinical controlled trial.

Keywords : cognitive rehabilitation, illiterates, India, traumatic brain injury

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