CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

http://doi.org/10.5281/zenodo.1974738

Available online at: http://www.iajps.com ***Research Article***

AN ASSESSMENT OF THE MULTIPLE SCLEROSIS COGNITIVE DYSFUNCTION THAT INCLUDES MULTIPLE PHYSICAL & MENTAL DISORDERS DIFFICULT TO BE EXPLAINED

[1]Dr. Namra Ashraf, [2]Dr. Mehik Hassan Gillani, [3]Usama Bin Aslam

[1]Khawaja Muhammad Safdar Medical College Sialkot.

[2]DHQ Sheikhupura

[3]Independent Medical College Faisalabad

Abstract :

Objectives: *Multiple Sclerosis has explored a variety of mental and physical disabilities and setbacks which are difficult to explain precisely. Moreover, their classification is another uphill task to identify them in the category. Additionally, clinical scholars found it difficult to explore the factors which lead to the outcomes of the neuro-rehabilitation cycle. By considering the intricacy in terms of Multiple Sclerosis and RP, this research endeavoured to examine the mental infirmities among relapsing-remitting multiple sclerosis patients (RRMS).*

Methodology: *We took two sets of patients and each carried twenty-seven patients and examined their intellectual performances. Those groups are termed as RRMS and HC (Healthy Controlled) subsequently. In terms of this clinical examination, every patient observed a thorough study of their cognitive state including physical and mental disabilities. These clinical evaluations based on Stroop tests, and WMSR tests. This research was completed at Services Hospital, Lahore (February to November 2017).*

Results: *The statistical values portrayed a clear difference among all the constituents of groups as the p-value of Stroop test is (<0.05), WMS-Digit Span has the p-value (<0.05), p-value (<0.001) in WMS-Logical Memory and the value of p is (<0.001) for WMS-Visual Reproduction. The significance remained while the depression's effect was controlled. We observed a similar difference between delayed and immediate visual reproduction among the RRMS subjects as the value of p is (<0.05) for WMSVRI and WMSVRD. So, on the grounds of the findings of this research, we can make the case that the ratio of mental disorders and deficiencies are more common among RRMS cases.*

Conclusion: *Research scholars and discipline related physicians must take up this case of mental evaluation and restoration of the subjects in connection with the other disciplines too, especially for the cases of RRMS.*

Keywords: *Relapsing-Remitting Multiple Sclerosis (RRMS), Wechsler Memory Scale-Revised (WMS-R), Attention, Memory, Depression Cognitive Dysfunctions, Stroop Color-Word Interference Test, EDSS, Multidisciplinary and Rehabilitation.*

Corresponding author:

Namra Ashraf,

Khawaja Muhammad Safdar Medical College, Sialkot.

QR code

Please cite this article in press Namra Ashraf et al., ***An Assessment Of The Multiple Sclerosis Cognitive Dysfunction That Includes Multiple Physical & Mental Disorders Difficult To Be Explained.,*** *Indo Am. J. P. Sci, 2018; 05(12).*

INTRODUCTION:

The studies regarding neurological diseases have explored that it is hard to trace the problematic area like MS. Among the MS subjects, physicians have regarded the memory, higher level mental functions and attention, are three cognitive regions which are highly affected areas [1 – 5]. Unfortunately, physicians and other research professional did not focus on these brain-related disorders as they put it aside by not giving the required necessary attention to this matter. Whereas, they displayed more concern for the physical disabilities among the patients. They neglected this is of concern as it is equally to be addressed by the professionals. These mental disorders have a variant ratio as it can prevail between (30 - 70%) [1, 4 – 6]. Additionally, people recognized these cognitive disorders can affect the daily routine life of the people [4, 7, 8]. Rehabilitation programmers can easily handle the situation if the subjects report to them at their early stage. Moreover, patients would not require a complete dependency [2]. So, the connection between recover procedure and MS compelled the researchers to conduct a study on a two small group research population as RRMS and control group who based on the patients who were a volunteer.

METHODOLOGY:

This research was completed at Services Hospital, Lahore (February to November 2017). We selected two samples of patients for the comparison of their cognitive performance. The first group encapsulated twenty-seven RRMS patients among whom nineteen certain cases of RRMS whereas, rest of the eight patients were McDonald. The second group also had twenty-seven patients who were a volunteer for the sake of their clinical evaluation in terms of mental dysfunction. Clinical examination declared nineteen patients as certain cases of RRMS who have (<2) attacks. On the other hand, (8) patients reported with (1) attack. These eighteen patients reported this disorder by conducting McDonald's process. This study also took an account of conditions of all the patients and the aim of their clinical examination. As this matter bears the vulnerability of persons' societal affairs and social standings, we acquired informed consent from all the patients. As for as the inclusion criteria are concerned, we included the patients by first confirming that they are going through a stable period and they are using any steroids over the period of last month. This study excluded all the patients who were suffering from severe psychiatric issues except MS. We acquired the data from the research population of twenty-seven HC group and tally it RRMS group patients. On the other hand, the patients who were suffering from multiple psychiatric disorders fell in the exclusion criteria that we set for the study. Moreover, all the patients who were using some sort of drugs are also not the part of the research. We recorded a thorough clinical examination of each patient in terms of depression (BDI), EDSS, Hauser AI, physical disabilities, and mental functioning with the help of Stroop test (perception and memory).

Stroop Color-Word Test: SCW test took the account of patients' attention, interruptions, and the activities which make the patients attentive in the tasks [10-13]. We derived the interruption points by subtracting word naming points from the original point scores [12,13].

Wechsler Memory Scale (Revised): The research scholars propose this test to evaluate the cognitive processes like the function of memory, its sustainability, attention, focus, and active part of the memory among the population from (16 – 89) years old. The score obtained from this task determines that how effectively patients achieved the tasks and skillfully they process the information by managing it covertly [14,15]. Digit Span works like a weight tied to the spring that moves forward and back on full stretch. We use it for the measurement of short-term memory, the focus of the patients and attention [10,11,14]. We told two stories to the patients to assess their verbal memory and concentration and showed them geometrical shapes to remember, to assess their visual memory [10, 15].

Statistical Analysis: We used the Mann-Whitney-U (MWU) test to evaluate the performance of both the groups and presented the data in the descriptive form. To assess the value changes, we applied the Wilcoxon-signed ranks test. But to take an overall picture of the significant difference between the groups we applied (MANCOVA). For covariate, we used (BDI). At the end, we used Pearson's r to assess the association in EDSS and mental proficiencies.

RESULTS :

The RRMS patients and HC were similar irrespective of their sex and age factor. We included the demographic picture of cognitive disabilities in this study. From the first group, nineteen patients suffered from less than (2) attacks and rest of the eight patients reported (1) attack. We also observed that these patients have also some physical deficiencies. Findings of the study also coded that some aspects related to cognitive problems like; perception, memory and focus are also impaired. In terms of the auditory test, the patients of RRMS completed the task but took a bit longer period to accomplish it as compare to other individuals. The score of obstruction and interference is higher in naming the colour and reading the word activity. Apparently, the

patients of RRMS scored lower than the HC group. So, through these statistics, we can infer that the mental efficiency is deficient. We found the value of lambda as (0.573), F is (3.136) and p is less than (0.005) with the help of MANCOVA test. When we made some adjustments both the groups recounted different performances except SWT scores as RRMS group scored poorly as compared to HC patients. SW is an easy subpart as we can equate it with other subparts. We recorded rest of the other parts contrastive. Within the RRMS patients, we recorded the highest dissimilarity between SW and SCW. So, the results showed that the most affected areas are information processing, memory and concentration. We recorded a major difference between DSF and DSB whose p-value is less than (0.001). The statistics also reported a significant fluctuation in immediate and delayed visual reproduction.

Table – I: Gender Distribution

Gender	MS		Controls	
	Number	Percentage	Number	Percentage
Female	21	77.80	21	77.80
Male	6	22.20	6	22.20

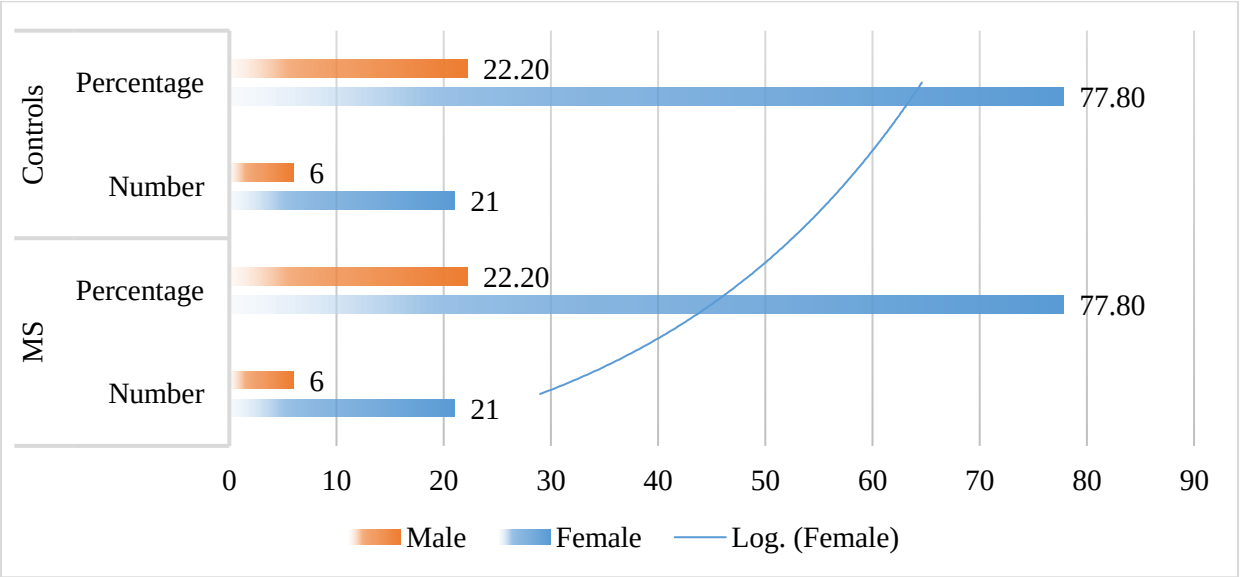


Table – II: Demographics Details

Participants		Number	Percentage
RRMS Subgroups	Patients with ≤ 2 attack	19	70.40
	Patients with 1 attack	8	29.60
Extremity Involvement	No	6	22.20
	Monoparesis-plegia	5	18.50
	Hemiparesis-plegia	9	33.30
	Paraparesis-plegia	4	14.80
	Quadriparesis-plegia	3	11.10

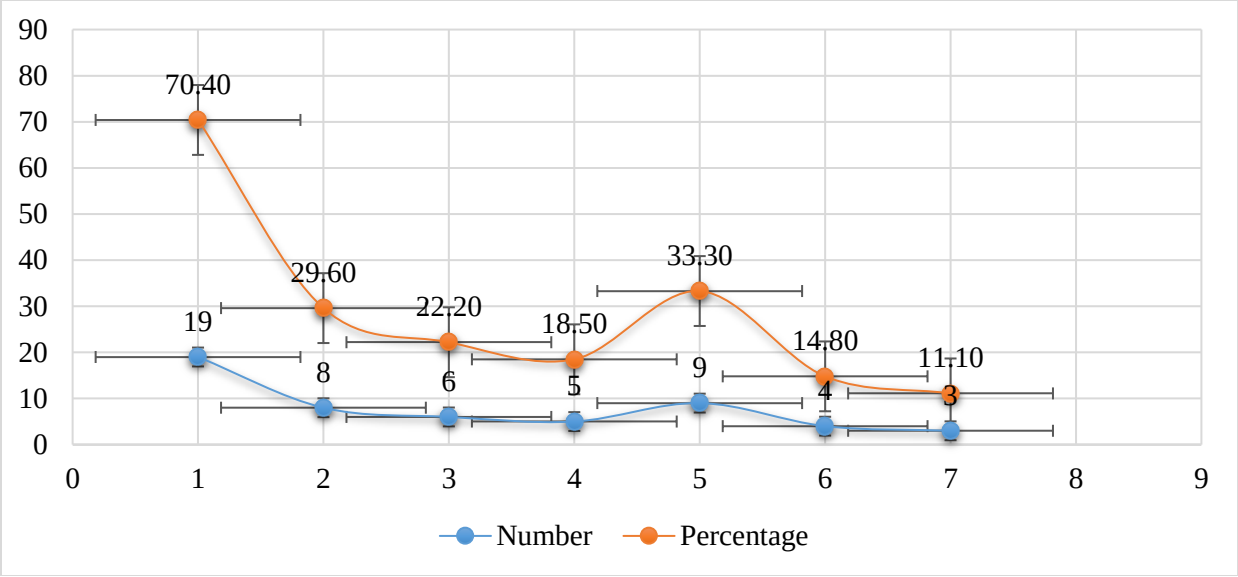


Table – III: Age and BDI Stratification

Age and BDI	RRMS		Controls		Z-Value	P-Value
	X	SD	X	SD		
Age (years)	33.11	11.39	31.22	10.93	-0.563	> 0.05
BDI	16.19	9.89	5.85	6.32	-4.315	< 0.001

Table – IV: Demographics Characteristics

Outcomes	X	SD
Duration of Disease (Years)	5.3	4.45
Number of Relapses	2.93	1.75
Time After Relapse (Months)	1.93	1.39
EDSS	1.3	1.24
AI	0.15	0.36

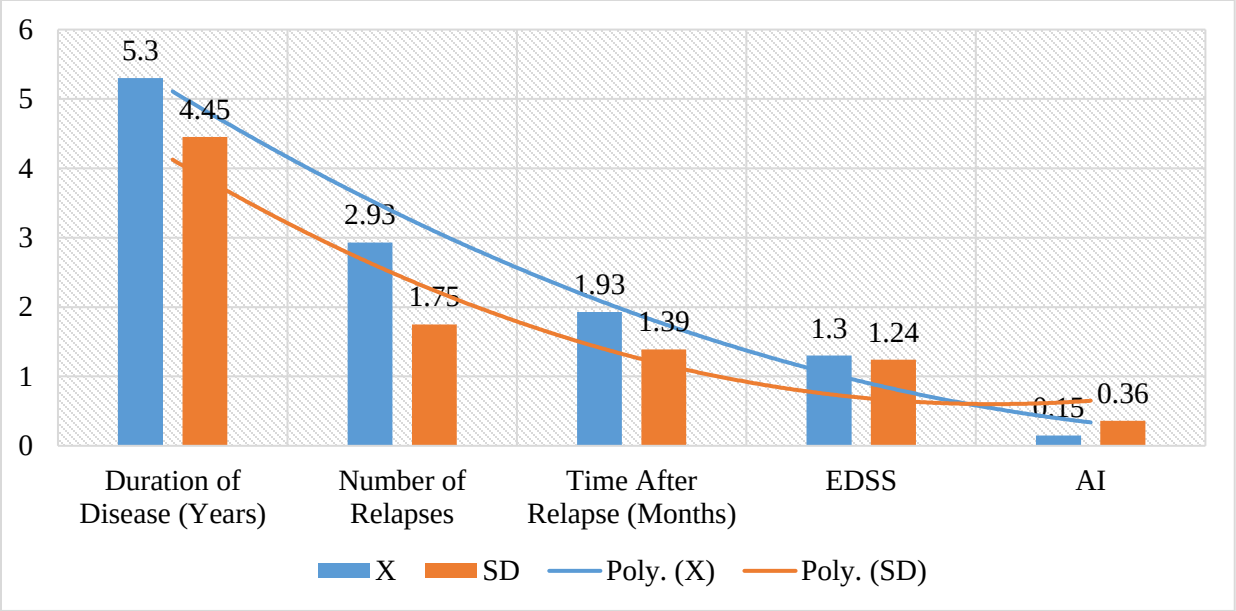
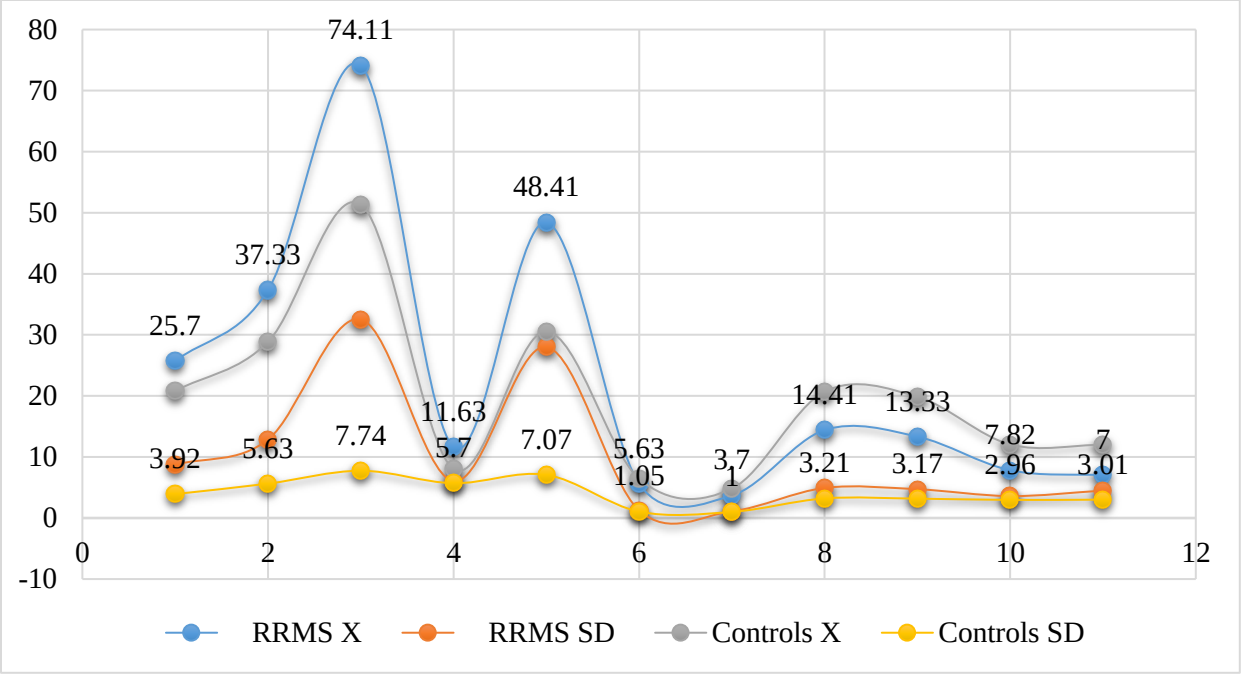


Table – V: Scores of Cognitive Tests

Outcomes	RRMS		Controls		Z-Value	P-Value	Corrected with Depression	
	X	SD	X	SD			F	p
Stroop-Word	25.7	8.72	20.82	3.92	-3.079	<0.005	3.8	<0.05
Stroop-Color	37.33	12.85	28.85	5.63	-3.605	<0.001	5.14	<0.01
Stroop-Color Word	74.11	32.54	51.37	7.74	-3.914	<0.001	8.2	0.001
Stroop-Word/Color	11.63	6.03	8.04	5.7	-2.504	<0.05	2.54	>0.05
Stroop-Word/Color Word	48.41	28.02	30.56	7.07	-3.394	0.001	7.12	<0.005
WMS-Digit Span-Forward	5.63	1.25	6.44	1.05	-2.393	<0.05	3.53	<0.05
WMS-Digit Span-Backward	3.7	1.1	4.82	1	-3.401	<0.001	7.67	0.001
WMS-Logical Memory-Im.	14.41	4.93	20.7	3.21	-4.572	<0.001	15.17	<0.001
WMS- Logical Memory-Del.	13.33	4.71	19.85	3.17	-4.764	<0.001	17.67	<0.001
WMS-Visual Reproduction-Im.	7.82	3.59	12.04	2.96	-4.332	<0.001	11.11	<0.001
WMS-Visual Reproduction-Del.	7	4.49	12	3.01	-4.122	<0.001	11.39	<0.001



DISCUSSION:

In common beliefs, mental process and cognitive dispositions revolve around memory, concentration, feelings, and proactive planning and they all are interlinked with each other. So, in light of these perceptions, people believe that to recover the psychiatric disabilities is difficult [3, 7]. Scholars also propounded that one cannot apply one's research results to the other regions. We cannot generalize it to all the countries [16]. To the best of our endeavoured knowledge, the findings and the research data is a first voluminous picture on this subject. On the similar subjects, we also seek perceptions from the other in-service physicians and professionals regarding the patients of RRMS. Moreover, the findings of our research validated the previous literature on population-based research [10, 16, 17]. But no literature ever made a point of segregation where one type of cognitive illness differs from the other [1]. In connection to this phenomenon, we compared the patients of RRMS with the other group of health control. We made four classes of depression according to their levels in our research participants. The first level who had the value between (0 – 9) categorized as no depression, (10 – 15) as minimal depression, mild depression laid between (16 – 19), and moderate between (20 – 29). And those who came up with more than (30), we categorized them as depression [8]. To control the effects of depression statistically, we used MANCOVA. RRMS patients commonly reported depression but it has no influence on cognitive processes. To validate this claim, it is necessary to conduct more research in future. Finlayson M. & Shevil E. (2006) claimed that it is more certain that changes are being occurred in cognitive processes, as these changes are very intermingled and well knitted, which are greater than perceived in the past [5]. So, health professionals and researchers proposed the physicians and psychiatrists that they must take an account of changes during dealing with the clients of MS. Because, during the Stroop test, we provided some extra time to the participants to accomplish their task. We evaluated multiple aspects of attention and concentration of the RRMS patients. The study of previous also reveals that there is a lucid connection between diseases regarding MS and subjective perceptions about cognitive issues of patients [10, 18]. The relevance and association between these two aspects compel the health professionals and researchers to study the matter from this point of view too. Additionally, on the grounds of this research, we recommend the functioning process, cognitive fatigue and the performance of cognitive tests as the future research area.

CONCLUSION:

Mainly, people term the neuropsychiatric disabilities as covert disorders. In the current era, people are commonly reporting these psychological disorders. Later assessments of the patients qualified the claims in support of this concept and reality. Therefore, this research makes the case that mental and cognitive-based evaluations and examinations should be more

relevant if take it in slots of dynamic disciplinary studies for quick and early recoveries. Additionally, these findings of this research also aluminates the new windows and ways to achieve the goals related to mental and cognitive process as well as the recovery for any disability.

REFERENCES:

1. Baron IS. III. Domains and tests: 6. Executive Function, 'Neuropsychological evaluation of the child', Baron IS (Ed), New York: Oxford University Press. 2004, pp 133-214.
2. Parmenter BA, Denney DR, Lynch SG. The cognitive performance of patients with multiple sclerosis during periods of high and low fatigue. Mult Scler 2003; 9:111-118.
3. Baron IS. III. Domains and tests: 7. Attention, 'Neuropsychological evaluation of the child', Baron IS (Ed), New York: Oxford University Press. 2004, pp 215-261.
4. Baron IS. III. Domains and tests: 11. Learning and memory, 'Neuropsychological evaluation of the child', Baron IS (Ed), New York: Oxford University Press. 2004, pp 351-405.
5. Einarsson U, Gottberg K, von Koch L, Fredrikson S, Ytterberg C, Jin YP, et al. Cognitive and motor function in people with multiple sclerosis in Stockholm County. Mult Scler 2006; 12:340-353.
6. MacAllister WS, Belman AL, Milazzo M, Weisbrot DM, Christodoulou, C, Scherl WF, et al. Cognitive functioning in children and adolescents with multiple sclerosis. Neurology 2005; 64:1422–1425.
7. Jonsson A, Andresen J, Storr L, Tscherning T, Sorensen PS, Ravnborg M. Cognitive impairment in newly diagnosed multiple sclerosis patients: A 4-year follow-up study. J Neurological Sciences 2006; 245:77–85.
8. Wade DT. Section 4. Measures for use in neurological disability: 15. Measures of "focal" disability, 'Measurement in Neurological Rehabilitation', Wade DT (Ed), New York: Oxford University Press. 1992, pp 166-174.
9. Lincoln NB, Dent A, Harding J, Weyman N, Nicholl C, Blumhardt LD, et al. Evaluation of cognitive assessment and cognitive intervention for people with multiple sclerosis. J Neurol Neurosurg Psychiatry 2002; 72:93–98.
10. Hildebrandt H, Lanz M, Hahn HK, Hoffmann E, Schwarz B, Schwendemann G, et al. Cognitive training in MS: Effects and relation to brain atrophy. Restorative Neurology and Neuroscience 2007; 25:33–43.
11. Morley S, William AC de C, Black S. A confirmatory factor analysis of the Beck Depression Inventory in chronic pain. Pain 2002; 99:289–298.
12. Bryant D, Chiaravalloti ND, DeLuca J. Objective measurement of cognitive fatigue in Multiple Sclerosis. Rehabilitation Psychology 2004;49(2):114–122.
13. Olivares T, Nieto A, Sanchez MP, Wollmann T, Hernandez MA, Barroso J. Pattern of neuropsychological impairment in the early phase of relapsing-remitting multiple sclerosis. Mult Scler 2005; 11:191-197.
14. Hoffmann S, Tittgemeyer M, von Cramon DY. Cognitive impairment in multiple sclerosis. Curr Opin Neurol 2007; 20:275–280.
15. Langdon DW, Thompson AJ. Multiple sclerosis: A preliminary study of selected variables affecting rehabilitation outcome. Mult Scler 1999; 5:94-100.
16. Nocentini U, Pasqualetti P, Bonavita S, Buccafusca M, De Caro MF, Farina D, et al. Cognitive dysfunction in patients with relapsing-remitting multiple sclerosis. Mult Scler 2006; 12:77-87.
17. Plohmann AM, Kappos L, Ammann W, Thordai A, Wittwer A, Huber S, et al. Computer-assisted retraining of attentional impairments in patients with multiple sclerosis. J Neurol Neurosurg Psychiatry 1998; 64:455-462.
18. Shevil E, Finlayson M. Perceptions of persons with multiple sclerosis on cognitive changes and their impact on daily life. Disability and Rehabilitation 2006;28(12):779–788.