

# Cognitive impairment in MS, performance in daily activity and perception: a patient/caregiver study.



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**Background:** cognitive impairment (CI) in multiple sclerosis (MS) affects up to 70% of patients<sup>1</sup> with significant impact on daily activities (DAs), and it's often detectable even in early stages of disease. **Our work aims to evaluate the relationship between CI measured by tests, performance in DAs and differences in perception of CI in patients and their caregiver.**

**Methods:** we recruited a sample of people with MS at MS Center of Cagliari. For cognitive evaluation we used the BICAMS<sup>2</sup> that measures processing speed (SDMT), verbal (CVLT) and visuospatial (BVMT) memory. We created an ad-hoc questionnaire (AtQuoP), to evaluate performance in DAs that do not require specific motor skills (i.e. purchasing flight tickets via internet, sending email, do a shopping list). To remove the effect of the social contest on the DAs we also tested caregiver performance with AtQuo (AtQuoCG); we then subtracted the patient's score from that obtained by the caregivers to estimate the MS impact on DAs (AtQuoCG minus AtQuoP = cost of MS in DAs). We used the MSNQ<sup>3</sup> to measure patients and caregivers perception of CI. Cognitive reserve was measured with the CriQ<sup>4</sup>. Finally, we scored anxiety and depression index with proper tests.

**Results:** we included 50 patients with their caregiver. Details on sex, age, education, disease duration and EDSS score are showed in table 1. CI (at least one test under 35 T-score) was detected in 27/50 (54%). Correlations were found between the BICAMS score, that evaluates the cognitive impairment, and: (1) impact on daily activities scored with AtQuoP; (2) AtQuoCG – AtQuoP; (3) patients self judgment measured with MSNQ and (4) caregiver perception about patient's CI (see results in table 2). No correlations were found between anxiety and depression scores and BICAMS results. T test showed a significant difference in CriQ score between impaired and preserved patients (mean score in CIP: 86,2 versus 98.9 in CPP; p: 0.001).

**Discussion:** we found that more than half (54%) of people in our sample showed a cognitive impairment. This cognitive impairment correlates with reduced abilities in activities of daily life. Taking into consideration the different socio-economical background among subjects (by subtracting the score of AtQuoP from that of their caregivers), these correlations are still significant. Patient's self judgment on their cognitive status correlates only partially with BICAMS results. Caregiver's judgment is more accurate, correlating with all the tests comprised in the BICAMS. This could suggest the importance of involving the caregiver when assessing the patient cognitive status. Finally, higher cognitive reserve seems to protect from cognitive impairment in our sample of MS people.

**Conclusion:** our data support correlation between cognitive function evaluated by BICAMS and performance in Daily Activities and cognitive Impairment as perceived by patients and caregivers.

Total subjects enrolled	50
Sex	12 M, 38 F
Age (years)	M 45 (SD 11.9, range 24-71)
Education (years)	M 11.4 (SD 4.1, range 7-22)
Disease duration (years)	M 11.9 (SD 4.7, range 1-37)
EDSS	M 3.2 (DS 2.1, range 0-8)

Table 1

		T score SDMT	T score BVMT	T score CVLT
AtQuoP	r	-.449	-.305	-.346
	P value	.001	.016	.007
AtQuoCG minus AtQuoP	r	-.395	-.261	-.308
	P value	.004	.043	.021
MSNQ PZ	r	-.367	-.135	-.257
	P value	.005	.176	.036
MSNQ CG	r	-.518	-.392	-.334
	P value	.000	.004	.012

Table 2: Pearson correlation between BICAMS scores and AtQuo scores and between BICAMS scores and MSNQ scores.

## References:

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