



Applying the International Classification of Cognitive Disorders in Multiple Sclerosis (IC-CoDiMS) at Diagnosis: Insights from a Single-Centre Cohort

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Objectives:

Cognitive impairment (CI) affects up to 70% of people with Multiple Sclerosis (PwMS). A recent study adapted the International Classification of Cognitive Disorders in Epilepsy (IC-CoDE) to define cognitive phenotypes in MS (IC-CoDiMS) using a large, multinational cohort. Since CI can be present from disease onset, this study aimed to investigate early cognitive profiles in a single-centre cohort of newly diagnosed PwMS, providing real-world insights into early cognitive characterization.

Materials and Methods:

At diagnostic work-up, PwMS underwent neurological and neuropsychological assessment (Rao Brief Repeatable Battery, Stroop Test). Domain impairment was defined using an established algorithm when two tests in a domain scored below -1.5 SD from the mean. Sociodemographic and clinical variables were also collected to explore potential associations.

Results:

A total of 274 PwMS (mean age 40.6y±12.8; 67% women; median EDSS 2.0; education: 13y±4 years) were included. At the -1.5 SD threshold, 41.6% were cognitively intact, 27.7% had single-domain, 13.5% bi-domain, and 17.2% multi-domain impairment. Memory (35%) and executive functions (27%) were the most frequently affected domains. Executive dysfunction was more common in women (31% vs 18%, p = 0.019), as were attention and processing speed deficits (30% vs 16%, p = 0.008). Older age was associated with an increased risk of multi-domain impairment (p = 0.04), while no associations were found with EDSS or education level.

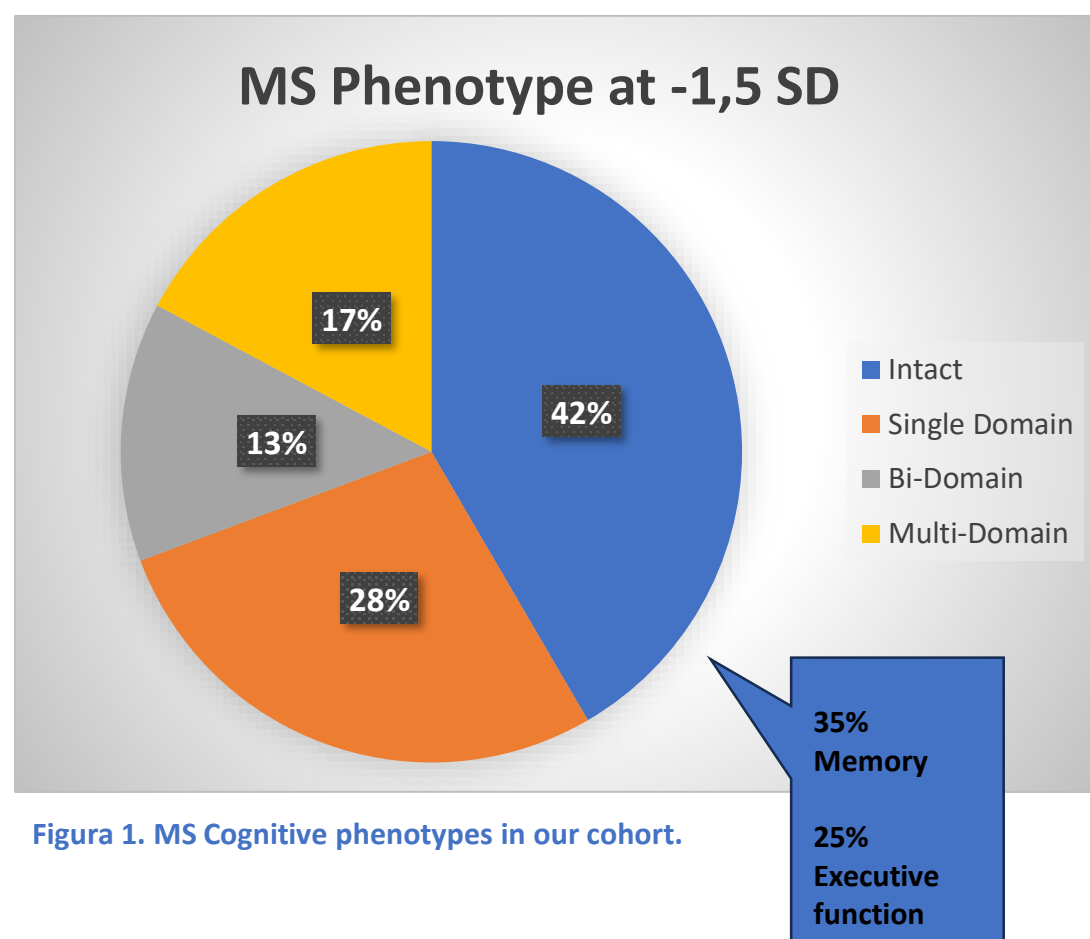


Figura 1. MS Cognitive phenotypes in our cohort.

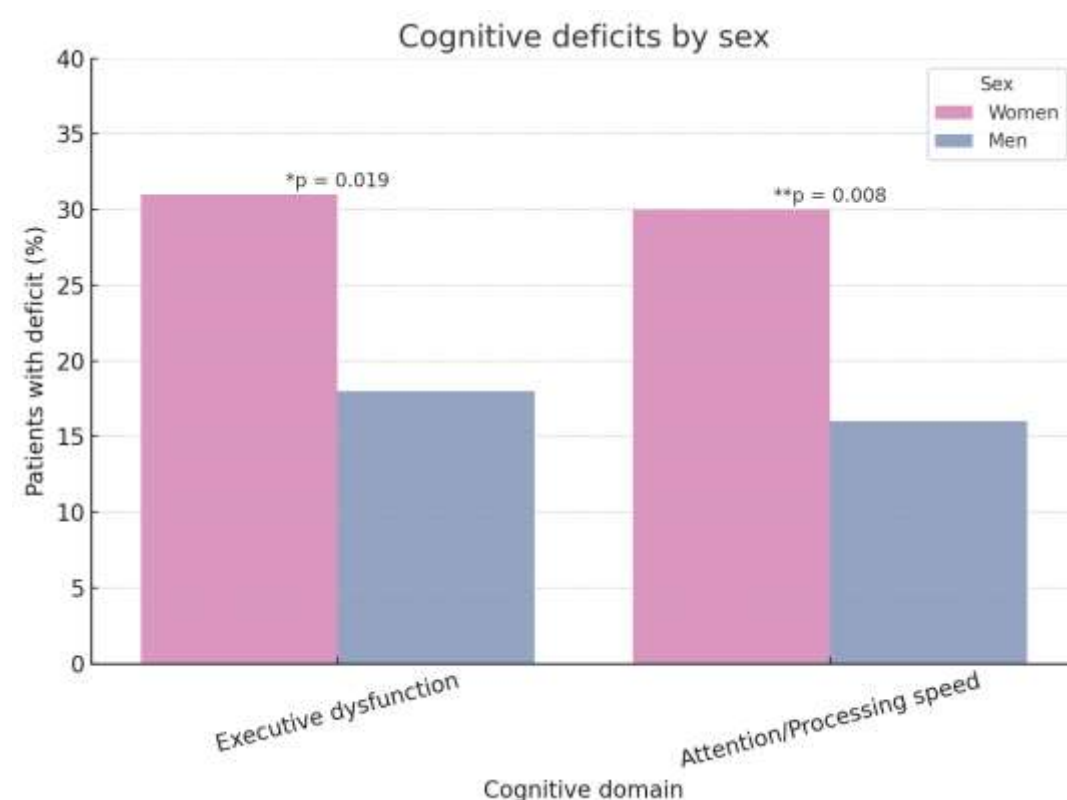


Figura 2. Cognitive deficits by sex

Discussion : These findings highlight the importance of early cognitive assessment in PwMS, even at the time of diagnosis. The application of IC-CoDiMS enables a structured and standardized classification of cognitive impairment, supporting more accurate prognostic stratification and individualized intervention planning. Notably, the observed sex-related differences in cognitive profiles, particularly the higher prevalence of executive and attentional deficits in women, underline the relevance of integrating sex as a biological and clinical variable in both research and care pathways. Recognizing and addressing these differences may lead to more tailored and effective cognitive management strategies in MS.

Conclusions: IC-CoDiMS proves to be a useful tool for identifying cognitive phenotypes from the earliest stages of MS. Emphasizing sex-related cognitive variability can enhance its clinical applicability and promote more personalized approaches to cognitive assessment and rehabilitation.

1. Portaccio, E., & Amato, M. P. - Cognitive Impairment in Multiple Sclerosis: An Update on Assessment and Management. - NeuroSci - 2022 - 3 (4) - 667-676

2. Hancock LM, Galioto R, Samsonov A, Busch RM, Hermann B, Matias-Guiu JA. - A proposed new taxonomy of cognitive phenotypes in multiple sclerosis: The International Classification of Cognitive Disorders in MS (IC-CoDiMS). - Mult Scler. - 2023.