MEASURING PRODUCTIVITY LOSS IN EARLY-STAGE RELAPSING-REMITTING MULTIPLE SCLEROSIS

Susana Sainz de la Maza[1], Rocío Gómez-Ballesteros[2], Mónica Borges[3], Lucía Ruiz de Alda[4], Jorge Maurino[2], Tamara Castillo-Triviño[5]

[1]Department of Neurology, Hospital Universitario Ramón y Cajal, Madrid, Spain; [2]Medical Department, Roche Farma, Madrid, Spain; [3]Department of Neurology, Hospital Universitario Virgen Macarena, Sevilla, Spain; [4]Health Economics and Outcome Research Unit, Roche Farma, Madrid, Spain; [5]Department of Neurology, Hospital Universitario Donostia, San Sebastián, Spain

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OBJECTIVE

- Multiple sclerosis (MS) is one of the most common causes of neurological disability in young adults with major consequences for their autonomy and capacity to maintain work.
- Symptoms affecting quality of life are common even in the early stage of the disease course. However, productivity loss has been mainly studied in patients with long-standing MS.
- The aim of this study was to assess the impact on productivity in early-stage relapsing-remitting multiple sclerosis (RRMS).

METHODS

- A multicenter, non-interventional, cross-sectional study was conducted in Spain (MS-ONSET study).
- Key eligibility criteria were age ≥ 18 years old, RRMS according to the 2017 revised McDonald criteria, a disease duration ≤ 3 years, and an Expanded Disability Status Scale (EDSS) score from 0 to 5.5 (included).
- The study was approved by the investigational review board of the Hospital Universitari Arnau de Vilanova (Lleida, Spain). Written informed consent was obtained from all participants.

Outcome measures

- Absenteeism, presenteeism, and unpaid work loss due to RRMS were measured using the Valuation of Lost Productivity (VOLP) questionnaire. The EDSS, SymptoMScreen (SyMS), Modified Fatigue Impact Scale (MFIS-5), Hospital Anxiety and Depression Scale (HADS), and Symbol Digit Modalities Test (SDMT) were used to gather information on disability, symptom severity, fatigue, mood/anxiety, and cognition, respectively.
- The VOLP is a validated, 36-item, generic questionnaire assessing the labor input loss due to health (any physical, mental, or emotional problems or symptoms).

Statistical analysis

- Associations between the VOLP and clinical outcomes were analyzed using Spearman's rank correlations.

RESULTS

- A total of 189 patients were included in the study. Demographic and clinical characteristics of the sample are shown in **Table 1**.

Table 1. Demographic and clinical characteristics

	N=189
Age, years, mean (SD)	36.1 (9.4)
Sex (female), n (%)	135 (71.4)
Education, n (%)	
University	151 (79.9)
Linving status, n (%)	
With a partner/family members	164 (86.8)
Time since diagnosis, years, mean (SD)	1.1 (0.8)
Time since first attack, years, mean (SD)	1.2 (0.8)
Number of relapses since first attack, mean (SD)	1.8 (8.4)
Number of relapses in the last year, mean (SD)	0.9 (1.0)
Treatment naïve-patients, n (%)	170 (89.9)
EDSS score, median (IQR)	1.0 (0-2.0)
SDMT score, mean (SD)	51.7 (14.7)
≤49 correct answers, n (%)	77 (41.0)
SyMS score, mean (SD)	12.0 (10.8)
MFIS-5 global score, mean (SD)	6.2 (5.1)
HADS	
Anxiety global score, mean (SD)	7.8 (4.3)
Depression global score, mean (SD)	4.1 (3.9)
Anxiety categorized (probable cases), n (%)	47 (24.9)
Depression categorized (probable cases), n (%)	47 (24.9)

EDSS: Expanded Disability Status Scale; HADS: Hospital Anxiety and Depression Scale; IQR: Interquartile range; MFIS-5: 5-item Modified Fatigue Scale; SD: Standard deviation; SDMT: Symbol Digit Modalities Scale; SyMS: SymptoMScreen.

- One hundred thirty patients (68.8%) were working for pay or self-employed. Fifty-three patients (40.8%) reported absence from work in the past 3 months because of their disease with an average of 14.3 absent workdays. Their health problems resulted in the loss of 3.4% of their actual work time in the past 7 days. Thirty patients got help (11.8 hours) with their unpaid work activities from relatives, friends or neighbors because of health problems in the past 7 days.
- Absenteeism was significantly correlated with anxiety and depression, fatigue, symptom severity, and cognition. Presenteeism was significantly correlated with fatigue, symptom severity, depression, and disability. Spearman's rank correlations are shown in **Table 2**.

Table 2. Spearman correlations between value of productivity and clinical and work outcomes

	Absent workdays due to RRMS rho (p-value)	Percentage time loss while working due to RRMS among actual work time rho (p-value)
Disability	0.05 (0.54)	0.21 (0.03)
Symptom severity	0.21 (0.01)	0.37 (<0.001)
Fatigue	0.21 (0.01)	0.37 (<0.001)
Anxiety	0.29 (<0.001)	0.15 (0.11)
Depressive symptoms	0.29 (<0.001)	0.26 (0.008)
Cognition	-0.17 (0.04)	-0.14 (0.14)

RRMS: Relapsing-remitting multiple sclerosis.

CONCLUSIONS

- **Work participation and job retention are critical objectives to reduce the economic burden that MS imposes on both the patient and the society.**
- **Anxiety, depression, fatigue, and cognitive impairment are common problems already existing at earlier stages of the disease with a substantial impact on work outcomes.**
- **Productivity loss even in a MS population with low physical disability and short disease duration stresses the need for more efficient treatment control of disease activity from earlier stages.**

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