

Work Productivity Impairment Among Individuals with Progressive Multiple Sclerosis

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*At the time of study

BACKGROUND

- MS can have a major economic impact due to loss of productivity and impairment of activity¹
- In patients with MS, workplace productivity is reported to be associated with absenteeism (missing work for health reasons) and presenteeism (when a patient is at work but unproductive because of health reasons)
 - In patients with MS, 44% reported absenteeism and 24% reported presenteeism in the previous 3 months²
 - In patients with clinically isolated syndrome or relapsing remitting MS, 46.5% reported presenteeism in the previous week of work³
- Many patients with MS are unemployed or retired and continue to be impacted by the disease with limited ability to maintain current activities
 - Studies show ~40–53% of patients with PMS were unemployed or retired^{4,5}
- Although there have been previous studies reporting work productivity in MS, there are limited data available for patients with PMS
- Currently, there is a high unmet need for safe and effective DMTs in PMS, as there is only one approved product for PPMS and none approved for nonactive SPMS in the US; in addition, there is limited benefit in terms of disease modification in nonactive PPMS/SPMS

Work productivity and activity impairment data for patients with PMS could provide valuable insight regarding the detrimental impact of the disease in this population

OBJECTIVE AND METHODS

Objective: To describe and characterize the impact of MS on work productivity and activity impairment of individuals with active and nonactive PPMS and SPMS

Study design

- The annual cross-sectional survey from the Adelphi Disease Specific Programme conducted independently by Adelphi Real World (Bollington, UK) was used to collect data on adult patients with PMS
- Physicians (i.e. neurologists) who were qualified to practice medicine, responsible for treatment decisions for patients with MS, and made treatment decisions for ≥16 patients with MS in a typical month, were invited to participate in the cross-sectional survey
 - Participating physicians completed a physician-reported questionnaire for their next 10–15 patients with MS who consulted them
 - Physicians asked these 10–15 patients if they were willing and able to complete the patient-reported questionnaires for this study
- US adult patients (aged ≥18 years) with active or nonactive PPMS or SPMS who participated in this study and completed the WPAI questionnaire between 2016 and 2021 were selected
 - Active and nonactive PPMS were categories within the current diagnosis that the physician reported
 - Active and nonactive SPMS were defined by physician-reported current diagnosis of SPMS, and the presence or absence of relapse in the past year, respectively; patients with unknown status of relapses in the past year were excluded
 - Patients could not be participating in any clinical trials at the time of the survey
- Absenteeism, presenteeism, overall work productivity loss, and activity impairment were calculated for patients who completed the WPAI by MS type, administration of DMTs, age, time since MS diagnosis, and EDSS score
 - Overall work productivity loss incorporates both absenteeism and presenteeism and is only calculated for patients who worked either full- or part-time
 - Activity impairment is calculated for all patients, regardless of work status (e.g. unemployed, retired, working, etc.)
 - Higher impairment percentages represent worse outcomes

RESULTS

Patient characteristics

- In this study, 278 people were employed and evaluated (229 PPMS; 49 SPMS), as shown in **Table 1**
 - The mean age was 43.4 years (standard deviation [SD]=8.4), 49.3% were female, and 82.7% were White

Table 1. Patient Characteristics

Characteristic	Total (N=278)
Age, years	
Mean (SD)	43.4 (8.4)
Median (range)	45.0 (23.0–68.0)
Sex, n (%)	
Male	141 (50.7)
Female	137 (49.3)
BMI, kg/m²	
Mean (SD)	27.2 (3.7)
Median (range)	27.3 (17.8–44.3)
Ethnicity, n (%)	
White/Caucasian	230 (82.7)
African American	25 (9.0)
Asian	5 (1.8)
Hispanic/Latino	9 (3.2)
Other	9 (3.2)
PMS Subtype, n (%)	
Active PPMS	77 (27.7)
Nonactive PPMS	152 (54.7)
Active SPMS	22 (7.9)
Nonactive SPMS	27 (9.7)

WPAI by PMS subtype

- Across PMS cohorts, absenteeism, presenteeism and overall work productivity loss were 3.1%, 34.1% and 35.8%, respectively (**Figure 1**)
 - Absenteeism, presenteeism and overall work productivity loss were 3.1%, 35.2% and 36.9% in patients with PPMS, respectively, and 3.0%, 29.0% and 30.7% in patients with SPMS
- Overall, activity impairment was 52.7% in patients (**Figure 2**)
 - Activity impairment was 52.6% in patients with PPMS and 52.9% in patients with SPMS

Figure 1. Absenteeism, Presenteeism and Overall Work Productivity Loss Across PMS Cohorts

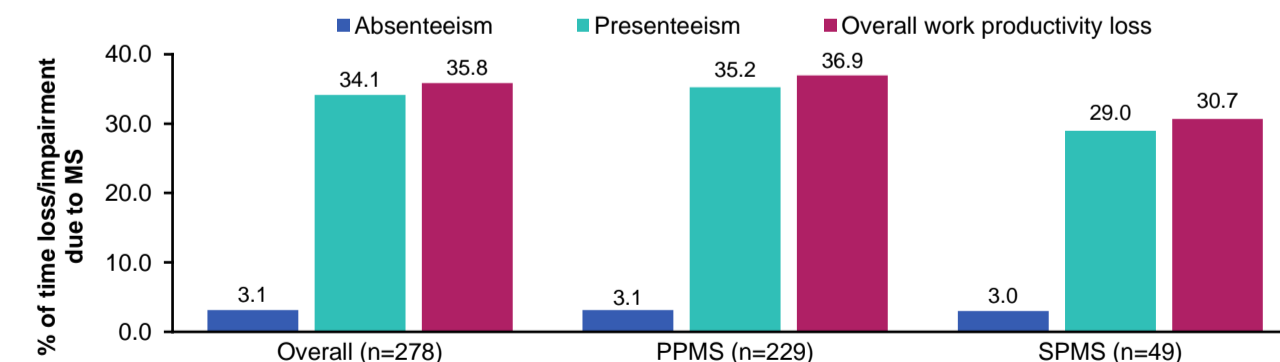
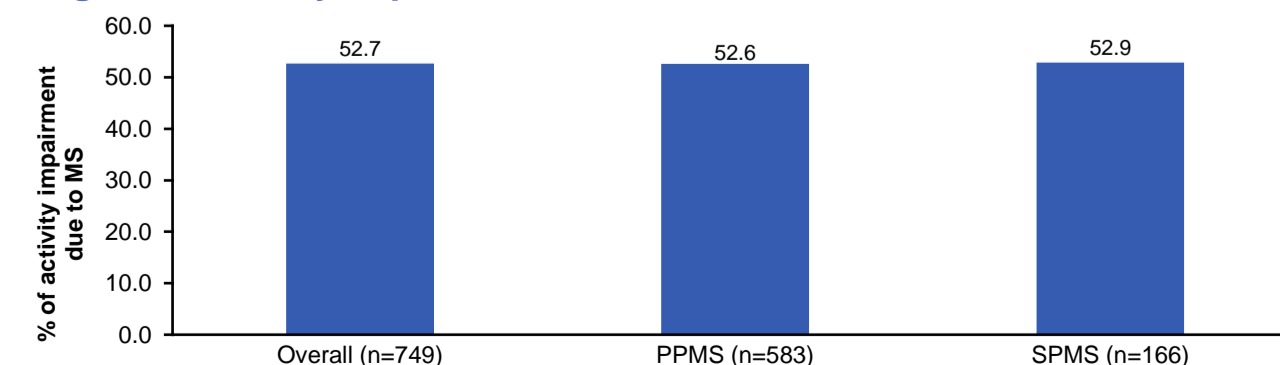


Figure 2. Activity Impairment Across PMS Cohorts



WPAI by age group

- Across PMS cohorts, overall work productivity loss tended to increase numerically with age from the 30–39-year age group and was highest in the >60-year age group (41.1%; **Figure 3**)
 - Absenteeism increased numerically with age from the 30–39-year age group and was highest in the >60-year age group (5.5%)
 - Presenteeism was highest numerically in the 20–29-year age group (39.2%), thus making the overall work productivity loss the second highest among age groups
- Activity impairment was slightly elevated in the 20–29-year age group (48.3%) and numerically increased from 42.2% in the 30–39-year age group to 48.8%, 55.2% and 66.0% in the 40–49, 50–59 and >60-year age groups, respectively (**Figure 4**)

Figure 3. Absenteeism, Presenteeism and Overall Work Productivity Loss by Age

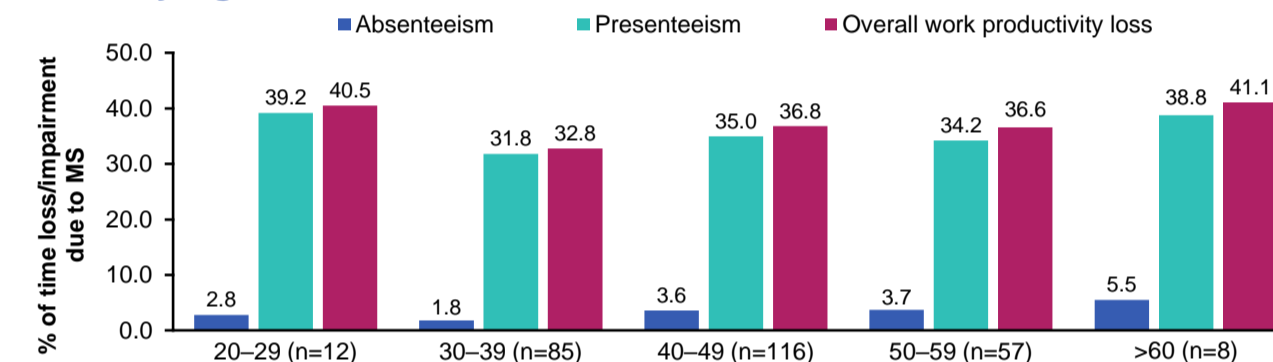
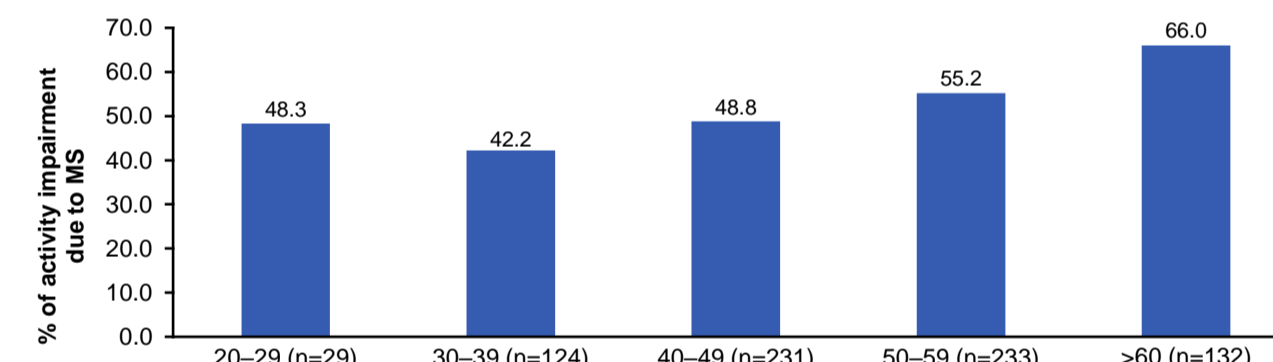


Figure 4. Activity Impairment by Age



WPAI by DMT mode of administration

- Across PMS cohorts, overall work productivity loss was numerically similar across DMTs and no DMTs (35.0–36.2%; **Figure 5**)
 - In patients who received DMTs and patients who did not receive DMTs, absenteeism ranged from 1.6 to 4.6% and presenteeism was numerically similar (34.8–35.0%)
- Activity impairment was also numerically similar across DMTs and no DMTs (50.1–53.9%; **Figure 6**)

Figure 5. Absenteeism, Presenteeism and Overall Work Productivity Loss by Mode of DMT Administration

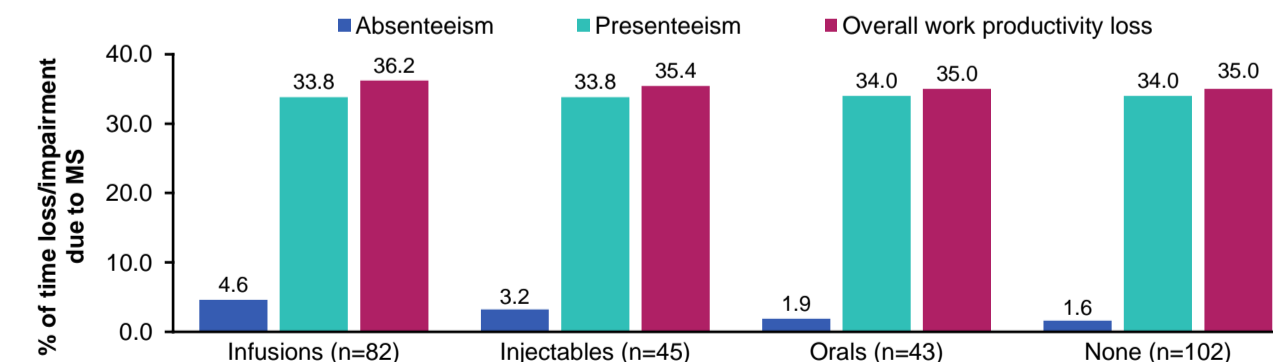
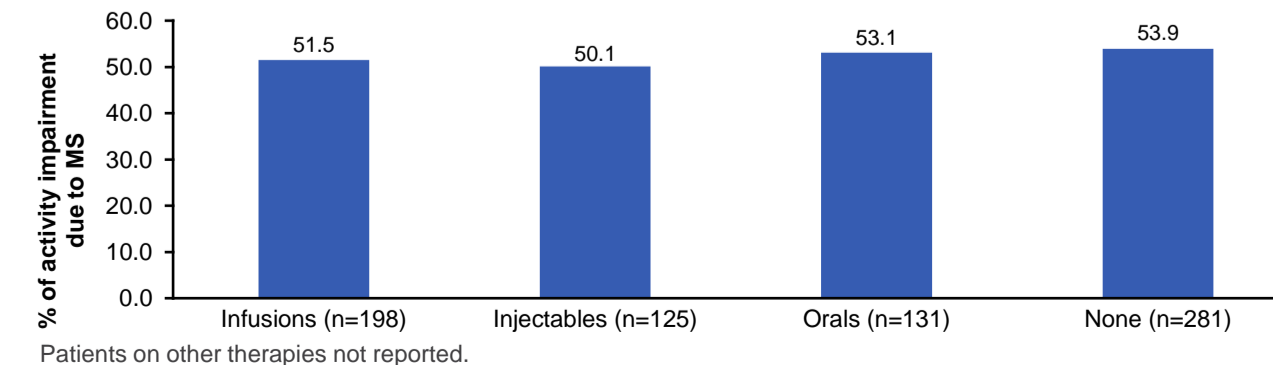


Figure 6. Activity Impairment by Mode of DMT Administration



WPAI by time from diagnosis

- Across PMS cohorts, overall work productivity loss was numerically highest for patients who received an MS diagnosis 5–10 years previously (39.9%; **Figure 7**)
 - Absenteeism, presenteeism and overall work productivity loss ranged from 2.0 to 5.3%, 30.3 to 36.8% and 31.5% to 39.9% by time from diagnosis, respectively
- Activity impairment was slightly elevated for patients with MS diagnosis <2 years previously (52.5%) and increased numerically from 44.3% for patients with diagnosis 2–5 years previously, to 48.0%, 59.6% and 62.7% for patients with diagnosis 5–10 years, 10–15 years, and >15 years previously, respectively (**Figure 8**)

Figure 7. Absenteeism, Presenteeism and Overall Work Productivity Loss by Time from Diagnosis*

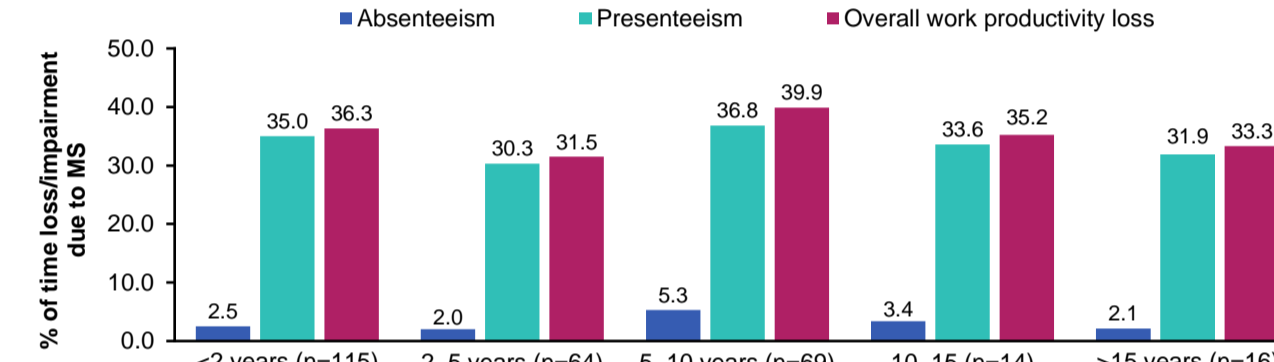
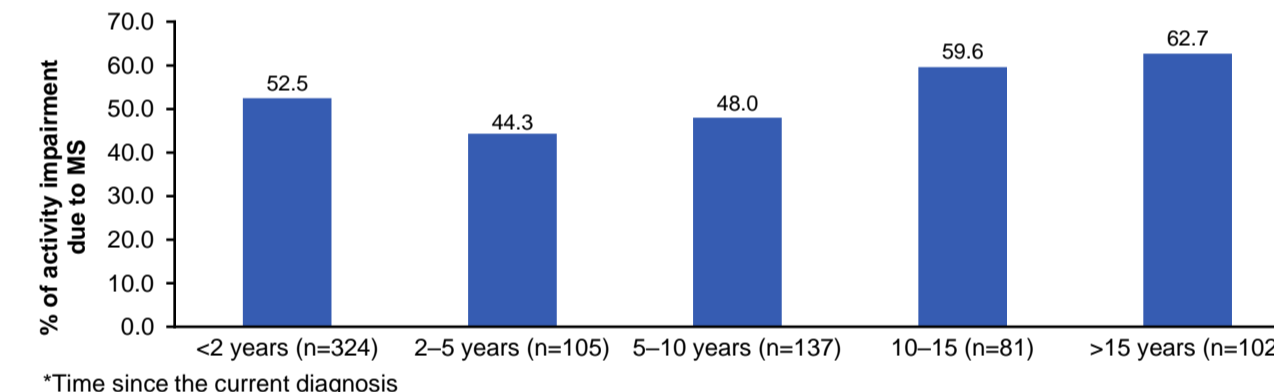


Figure 8. Activity Impairment by Time From Diagnosis*



WPAI by EDSS

- Across PMS cohorts, overall work productivity loss by EDSS group ranged from 35.7 to 44.3% (**Figure 9**)
 - Absenteeism by EDSS group ranged from 4.0 to 4.8%
 - Presenteeism increased numerically from 33.2% in the EDSS 0–5 group to 41.6% and 42.0% for the EDSS 5.5–6.5 and EDSS ≥7 groups, respectively
- Activity impairment increased numerically from 45.9% in the EDSS 0–5 group to 63.0% and 80.6% in the EDSS 5.5–6.5 and EDSS ≥7 groups, respectively (**Figure 10**)

Figure 9. Absenteeism, Presenteeism and Overall Work Productivity Loss by EDSS

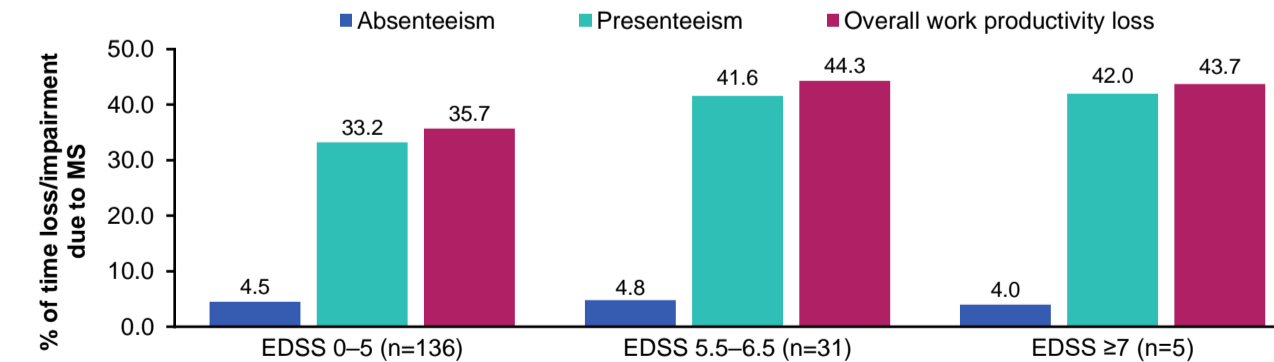
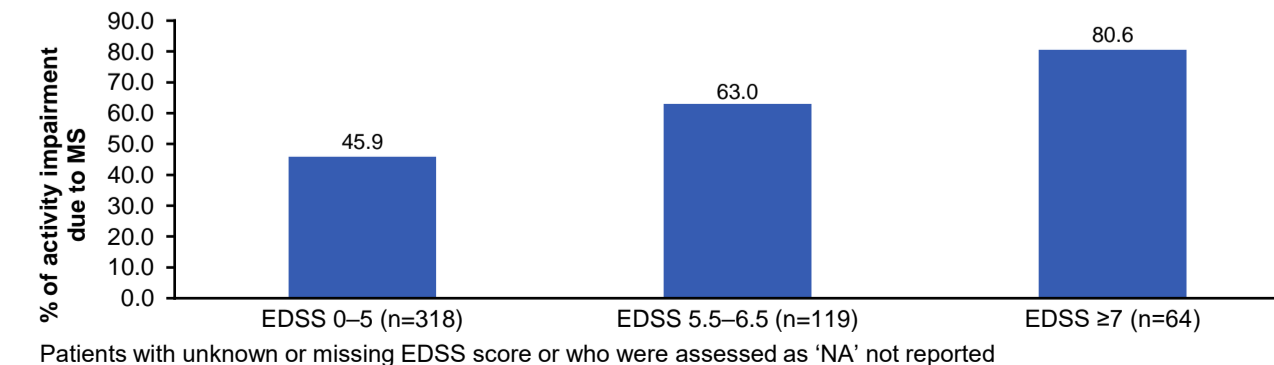


Figure 10. Activity Impairment by EDSS



LIMITATIONS

- Longitudinal data were not available to determine the impact of progressive MS over time
- No comparisons were made as this was a descriptive study
- Individuals not seen by physicians or not properly diagnosed with progressive MS were not included
- Patients with PPMS were oversampled to further study this population
- Patients had to be willing and able to answer the questionnaires
- Active and nonactive status of SPMS were determined using relapses in the prior year
- Work productivity is influenced by other factors not readily measured in the current analysis, such as cognitive impairment and fatigue

CONCLUSIONS

- This study highlights substantial overall work productivity loss and activity impairment among patients with active and nonactive PPMS and SPMS, demonstrating the high social cost of the disease**
 - For individuals with PPMS and SPMS, MS negatively affected overall work productivity loss by over a third (35.6%) and affected activities by over half (52.7%)
- Results show that PPMS and SPMS drive high overall work productivity loss and activity impairment in patients across all assessed subgroups, including progressive MS subtype, age, DMT mode of administration, time from diagnosis and EDSS score**
 - The high overall work productivity loss was mainly driven by presenteeism across all assessed subgroups
 - Unsurprisingly, there were numerical increases in both presenteeism and activity impairment as disability, measured using the EDSS, and age increased
 - Overall work productivity loss (35.0–36.2%) and activity impairment (50.1–53.9%) were numerically similar across patients who received DMTs and patients who did not receive DMTs, demonstrating the high unmet need

These data highlight the detrimental impact of disease associated with PPMS and SPMS on overall work productivity loss and activity impairment

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ABBREVIATIONS

BMI = body mass index; DMT = disease-modifying treatment; EDSS = Expanded Disability Status Scale; NA = not applicable; PMS = progressive multiple sclerosis; PPMS = primary progressive multiple sclerosis; SPMS = secondary progressive multiple sclerosis; WPAI = work productivity and activity impairment