ORIGINAL RESEARCH

Predictors for Employment Status in People With Multiple Sclerosis: A 10-Year Longitudinal Observational Study

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Abstract

Objective: To identify predictors for employment status after 10 years in a cohort of people with multiple sclerosis (MS), with the aim to increase knowledge concerning factors present at an early stage that are important for working life and work-life balance.

Design: A 10-year longitudinal observational cohort study.

Setting: University hospital.

Participants: A consecutive sample of people with MS (N=154) of working age were included at baseline, of which a total of 116 people participated in the 10-year follow-up; 27 people declined participation and 11 were deceased.

Interventions: Not applicable.

Main Outcome Measures: Baseline data on personal factors and functioning were used as independent variables. Employment status 10 years after baseline, categorized as full-time work, part-time work, and no work, was used as the dependent variable. A generalized ordinal logistic regression was used to analyze the predictive value of the independent variables.

Results: Predictors for full- or part-time work after 10 years were young age (P=.002), low perceived physical impact of MS (P=.02), fatigue (P=.03), full-time work (P=.001), and high frequency of social/lifestyle activities (P=.001) at baseline. Low perceived physical impact of MS (P=.02) at baseline also predicted full-time work after 10 years.

Conclusions: This study underlines the complexity of working life for people with MS, and indicates that it may be valuable to give more attention to the balance between working and private life, both in clinical practice and future research, to achieve a sustainable working life over time.

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Multiple sclerosis (MS) is the most common disease causing neurologic disability in younger adults in western society.[1] Sweden is considered a high-risk country for MS with a prevalence of

189 per 100,000 persons.[2] The onset of MS is usually at 20 to 40 years of age,[3] and life expectancy is reduced only to a limited extent.[4] Therefore, when receiving the diagnosis, most people with multiple sclerosis (PwMS) have a long life ahead of them of working age. Participation in working life has been reported to be highly valued by PwMS[5] and to be associated with better health-related quality of life.[6] Working has also been described as important for sense of identity, social interaction, and financial security.[5,7]

Challenges in working life are however common in PwMS, manifested by difficulties in getting and keeping employment,[8]

repeated sick leave, and early retirement.[9,10] Among those working, many report changed roles at work and decreased working hours.[11] Working has also been described to cause exhaustion and decreased activities in private life,[5] resulting in a challenged work-life balance. A well-functioning balance between working and private life has been suggested to be important for a sustainable working life over time.[12]

In the Swedish MS population, 62% have been reported to be on full or partial disability pension compared with 14% in the general population.[13] Partial disability pension is allowed in the Swedish social security system when working ability is assessed to be reduced by 25%, 50%, or 75%.

There is a growing knowledge of individual factors with potential to explain the high rates of PwMS not working. Personal factors[14] commonly reported to be associated with not working are old age,[15,16] low education level,[17] and male sex[15]; disease-related factors include high overall MS disability and long MS duration.[15,17] Among specific body functions[14] found to be associated with not working, the most commonly reported impairments are related to cognition,[18] energy level (fatigue),[10,16,17] and mood (depressive symptoms).[17] Aspects of activity and participation[14] have been more sparsely studied; however, there are associations reported between not working and mobility limitations[16,19] and limited ability to carry out activities of daily living.[20]

However, there is limited understanding for the full picture of how different factors interact in working life, in termination of working life, and how a balance between working life and private life is achieved. There are also still few long-term longitudinal studies ≥9 years.[21,22] In this study we therefore sought to identify long-term predictors for employment status from a range of carefully selected variables representing a broad-based picture of factors with potential to be interacting factors in working life. Because part-time work may be a means to sustain work-life balance, this level of working was taken into consideration in the study. Early identification of modifiable factors could facilitate the initiation of appropriate interventions at an earlier stage, supporting a more sustainable working life in PwMS over time.

The overall aim of this study was therefore to explore predictors for employment status after 10 years in a cohort of PwMS with the purpose to identify modifiable factors present at an early stage of MS. To study if the factors have different influence on employment status of PwMS, the specific aims were to identify predictors for full- or part-time work versus no work after 10 years, and predictors for full-time work versus part-time or no work after 10 years.

Methods

Participants and procedures

This study was based on a 10-year follow-up of a cohort of PwMS recruited in 2002 for a 2-year longitudinal study of functioning, perceived impact of MS, and use of health care.[23,24] Eligible at

baseline were all people with a definite MS diagnosis according to the Poser et al criteria[25] scheduled for an outpatient appointment with a neurologist at the MS center at Karolinska University Hospital in Stockholm, Sweden. Eligible for inclusion in this study were PwMS who had completed the 2-year study, were alive, and were of working age at the 10-year follow-up (ie, <55y of age at baseline) (fig 1). From the 219 PwMS included at baseline, a total of 154 PwMS were <55 years and therefore included in this analysis. Written informed consent was obtained before inclusion. The study was approved by the ethical review board in Stockholm (registration no. 2011/2068-31/5) and has been performed in accordance with the Declaration of Helsinki and its later amendments.

Data collection was carried out at baseline and 10 years ±6 months after baseline. It comprised a structured interview, self-reported questionnaires, and performance-based tests (table 1). The data collection took place at the MS center or in the participant's home and was guided by research physiotherapists. Data were also collected from medical records and neurologist assessments.

Employment status at the 10-year follow-up was used as the dependent variable, categorized as full-time work, part-time work (working, but less than full time), and no work. The independent variables included in the analyses were collected at baseline and were selected based on previous research and on the researchers' extensive clinical experience from rehabilitation and hospital care. The independent variables were age, education level, sense of coherence (measured by the Sense of Coherence Scale),[26] perceived physical and psychological impact of MS (Multiple Sclerosis Impact Scale),[27] overall MS disability (Expanded Disability Status Scale [EDSS]),[28] cognitive function (Symbol Digit Modalities Test),[29] fatigue (Fatigue Severity Scale),[30] depressive symptoms (Beck Depression Inventory),[31] fine hand use (9-Hole Peg Test),[32] walking ability (Timed 25-Foot Walk),[33] employment status, and frequency of social/lifestyle-activities (Frenchay Activities Index).[34] The Frenchay Activities Index is a questionnaire covering aspects of private life, including domestic and outdoor chores, leisure activities, and work.

Statistical analyses

Statistical analyses were carried out using IBM SPSS version 22.0[a] and Stata 13.[b] Mann-Whitney U test and chi-square test
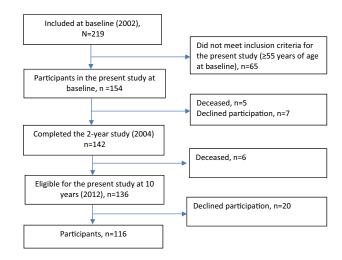

Fig 1 Flowchart of the study.