A LONGITUDINAL STUDY OF THE PSYCHOLOGICAL WELL-BEING AFTER A DIAGNOSIS OF MULTIPLE SCLEROSIS

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Introduction

After the diagnosis of Multiple Sclerosis (MS), depressive symptoms are frequent and directly linked to reduced quality of life. Despite all this formal assessment of behavioral/affective disturbance in clinical practice is infrequent. The aim of the current study was to explore if the diagnosis of MS affects the psychological wellbeing of the patients.

Methods

RADAR-CNS Multiple Sclerosis depression study is an observational non-randomised, non-interventional study, using commercially available wearable technology and smartphone sensors, that aims to evaluate if multi-parametric RMT represent a reliable and feasible instrument to better identify and characterize mood changes in newly diagnosed MS patients. Within the study, 103 patients across three European countries (Italy, Spain and Denmark) have been recruited so far. Baseline, 3 and 6 months questionnaires on depression (concerning the following items IDS-SR, CIDI-SF, BDI-II), as well as socio-demographic, anxiety, fatigue, disability and cognitive functioning data have been collected. A latent Markov model has been used to evaluate longitudinal patterns of mood disturbances in the cohort of patients. It has been employed to discover cluster of patients with different levels of severity of the illness and to understand transitions towards the cluster with the most severe symptoms.

Figure 1. RADAR-MS Study Design

Results

Variable	Levels	Baseline	Month 3	Month 6
Sex	Male	41 (43.2)	41 (43.2)	41 (43.2)
	Female	54 (56.8)	54 (56.8)	54 (56.8)
Age	Mean (SD)	37.4 (10.3)	37.4 (10.3)	37.4 (10.3)
Comorbidities	0	90 (94.7)	90 (94.7)	90 (94.7)
	≥ 1	5 (5.3)	5 (5.3)	5 (5.3)
Disease duration	Mean months (SD)	32.2 (51.4)	35.2 (51.4)	38.2 (51.4)
Time since diagnosis	Mean months (SD)	5.6 (4.5)	8.6 (4.5)	11.6 (4.5)
Disability	Mean EDSS (SD)	1.7 (1.0)	1.8 (1.0)	1.9 (1.0)
Children	No	54 (56.8)	54 (56.8)	54 (56.8)
	Yes	41 (43.2)	41 (43.2)	41 (43.2)
Eduction finish age	Mean (SD)	23.1 (4.3)	23.1 (4.3)	23.1 (4.3)
Income	< 15000	12 (12.6)	12 (12.6)	12 (12.6)
	15001-28000	22 (23.2)	22 (23.2)	22 (23.2)
	28001-55000	36 (37.9)	36 (37.9)	36 (37.9)
	55001-75000	7 (7.4)	7 (7.4)	7 (7.4)
	> 75000	18 (18.9)	18 (18.9)	18 (18.9)
IDS-SR	Mean (SD)	18.3 (10.6)	17.9 (12.2)	16.5 (11.4)
CIDI-SF	Mean (SD)	0.7 (1.4)	0.9 (1.6)	0.5 (1.2)
BDI-II	Mean (SD)	8.9 (8.3)	8.0 (8.1)	7.7 (9.3)
SDMT	Mean (SD)	54.8 (9.9)	56.6 (11.4)	58.7 (10.6)

Table 1. Baseline characteristics of the cohorts

The response variables showed significant individual differences across time and their mean value tended to decrease in the follow-up. A LM model with four latent state was selected on the basis of the BIC. The four clusters corresponded to increasing severity of depressive symptoms. Mild to moderate depressive symptoms were present in 40 % of patients at baseline (cluster 2 and 3), while 53% of patients had no mood changes after the diagnosis of the disease. Transitions towards clusters characterized by mild symptoms were likely in the follow-up, particularly for females and patients with high cognitive performances. Parenthood and high incomes were associated with high probabilities of maintaining the same latent state in the follow-up.
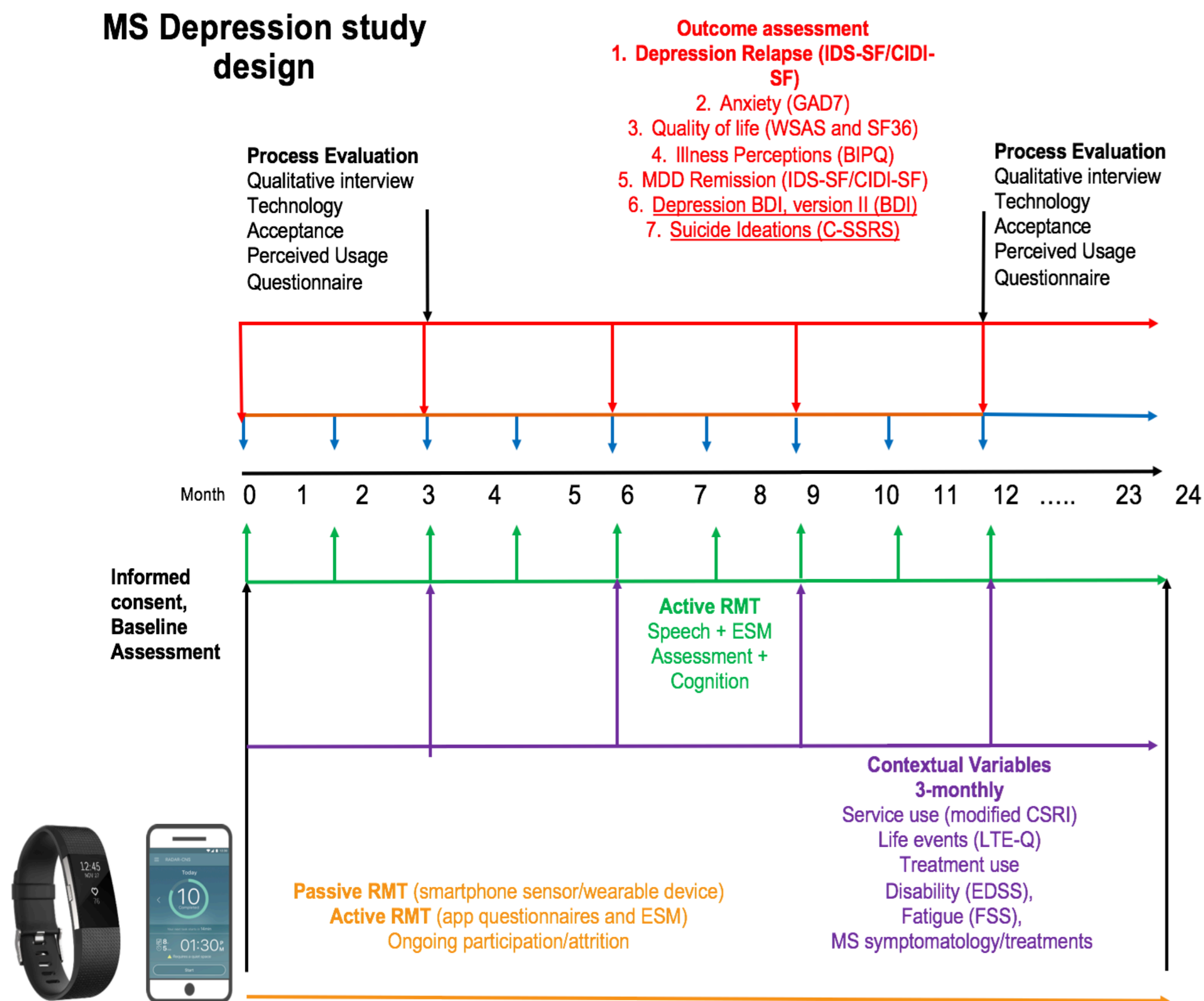
Initial probabilities for each latent state

1	2	3	4
0.532	0.144	0.262	0.063

Estimated averaged transition probability matrix at month 3

1	2	3	4
1.000	0.000	0.000	0.000
0.163	0.672	0.000	0.165
0.000	0.000	0.842	0.158
0.000	0.000	0.193	0.807

Estimated averaged transition probability matrix at month 6

1	2	3	4
0.981	0.000	0.000	0.018
0.365	0.635	0.000	0.165
0.152	0.047	0.801	0.158
0.000	0.000	0.554	0.445

Table 2. Basic Latent Markov Model

Results

A total of 95 patients (57% females, mean age of 37.4 years, SD 10.3) have been recruited and prospectively followed for at least 6 months. At baseline, the overall score at the three response variables was 18.3 (SD 10.6) for the IDS-SR questionnaire, 0.7 (SD 1.4) for the CIDI-SF questionnaire, and 8.9 (SD 8.3) at the BDI-II.

Conclusions

Depressive symptoms are common after the diagnosis of MS. The patients' baseline status as well as their individual adaptation responses are significantly influenced by sex, parenthood and cognitive performances. Remote monitoring technologies proved to have the potential to overcome the limits of standard clinical practice by offering granular assessments of patients' clinical and psychological condition.