

Pattern and Predictors of Change in Depressive Symptoms Over 30 Months in MS

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Introduction

Depression is a common symptom in relapsing-remitting multiple sclerosis (RRMS). To date, there is very little information about naturally-occurring changes in depressive symptoms over time, and even less is known about predictors of such changes in this population.

Purpose

This study examined naturally-occurring changes in depressive symptoms over a 30-month period and the associated demographic, clinical, and behavioral predictors of such change in RRMS.

Participants

269 persons with confirmed RRMS were recruited through the National Multiple Sclerosis Society (NMSS). The sample consisted of 223 women and 46 men. The participants were generally Caucasian (92%), married (70%), and employed (58%). The mean age of the sample was 45.9 years ($SD = 9.6$), and the mean disease duration of MS was 8.8 years ($SD = 7.0$). The median PDDS scale score was 2 (IQR = 3.0). The mean GLTEQ score was 27.7 ($SD = 23.1$).

Measures

Hospital Anxiety and Depression Scale (HADS), Godin Leisure-Time Exercise Questionnaire (GLTEQ), Patient Determined Disease Steps (PDDS) and a standard scale to measure including gender, age, race, marital status and employment were included in the analysis.

Procedure

The sample was recruited through the NMMS based on the following inclusion criteria: (a) diagnosis of RRMS confirmed by a physician; (b) relapse free in the past 30 days; (c) ambulatory with or without assistance (i.e., walk independently or walk with a cane/crutch or walker/rollator); and (d) willingness and ability to complete the study materials. Participants provided information on all of the measures via mail every 6 months over a period of 2.5 years, and received \$20 per assessment period.

Data Analysis

The data were analyzed using unconditional and conditional latent class growth modeling (LCGM) in *Mplus*. The first LCGA tested for subgroups (i.e., latent classes) that differed in both initial levels and rates of change in HADS depression subscale scores over time. The subsequent conditional LCGA examined the predictors of latent classes and included: age, gender, race, physical activity, disability, disease duration and employment and marital status.

Results

There were two classes of change. One class (34% of the sample) reported higher mean levels of depression that moderately increased over time (C2). The other class (64% of sample) reported lower mean levels of depression that decreased over time (C1) (See Figure 1). The parameters for initial status and change per class are provided in Table 1.

Figure 1. Patterns of change in HADS depression subscale scores for C1 and C2 over a 30-month period.

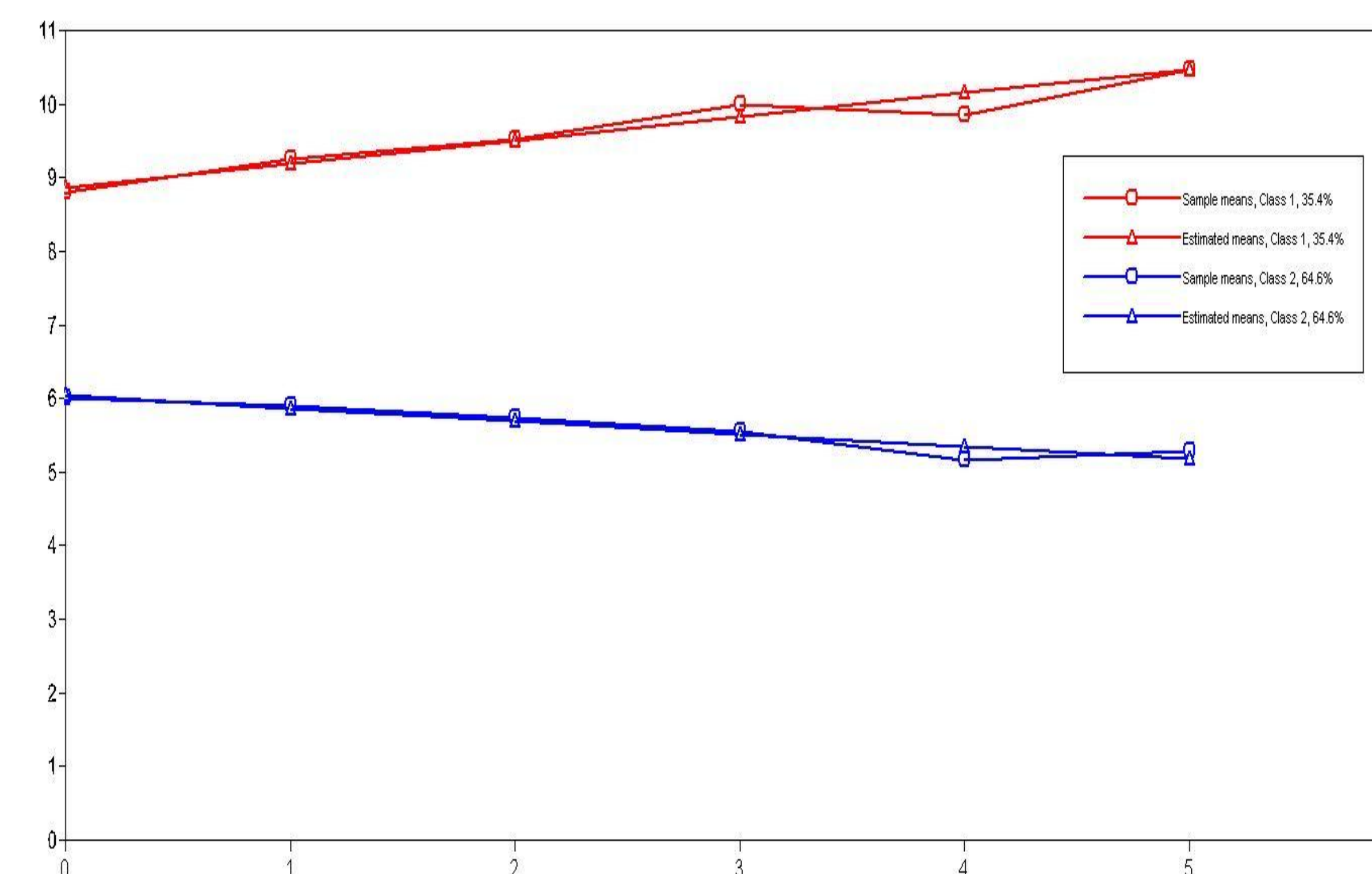


Table 1. LCGM Class characteristics

	Class 1 (C1)	Class 2 (C2)
N (%)	179 (66%)	91 (34%)
Baseline HADS	6.04 ($p < .001$)	8.86 ($p < .001$)
Change in HADS (per time point)	-0.17 ($p < .001$)	0.32 ($p < .001$)

Results (Continued)

Class membership was predicted by age, marital and employment status, and physical activity such that being older, married, employed, and physically active predicted a greater likelihood of have lower levels of depressive symptoms that decreased over time (i.e. C1) (See Table 2).

Table 2. LCGM predictors of class 1 membership

	Odds Ratio (OR)	P value
Older age	2.46	<.05*
Married	2.62	<.05*
Employed	4.29	<.005*
Physically active	2.71	<.05*
Duration of disease	.66	.34
Disability	.57	.19
Race	.61	.51
Gender	.71	.50

Conclusions

Depressive symptoms do worsen over time in nearly one third of persons with MS, and the pattern of change can be predicted by modifiable and non-modifiable variables including physical activity, age and marital and employment status.

Our findings suggest that individuals who are younger, unmarried and unemployed may benefit most from appropriate interventions for prevention of and monitoring depression and depressive symptoms in people with MS. Promotion of physical activity might represent a behavioral approach for mitigating the worsening of depressive symptoms, even after considering disability status.