

Abstract

Data for patients with multiple sclerosis (MS) who were seen at the Mellen Center for Multiple Sclerosis over the past 5 years was analyzed to determine factors which influenced whether or not they received psychotherapy services through the Behavioral Medicine (BM) department within the first year after their initial neurology appointment using logistic regression. Results revealed that marital status, course of multiple sclerosis, and depression at initial neurology appointment were all associated with a patient receiving services through BM.

Background

Patients newly diagnosed with MS or who experience disease progression may be particularly at risk for emotional distress and impaired physical functioning (Dennison, et al., 2009). Patients' cognitive, emotional, and behavioral reactions to diagnosis and disease progression (e.g., lack of social interactions, preoccupation with disability status) can also be predictive of illness-related functional impairment (Dennison et al., 2010). There is also a reciprocal relationship between disease progression and emotional distress such that disease progression can result in increased emotional distress while greater emotional distress can increase the risk for further disease progression (Pittion-Vouyovitch et al., 2006). Further evidence shows that disease severity and time since diagnosis are strongly correlated with mood symptoms in MS patients (Chwastiak, et al., 2002).

The present study will provides a naturalistic examination of factors which influence whether or not a patient receives BM services within the first year after they met with a neurologist as a referral source. This could help optimize the referral process for patients newly diagnosed with MS or experiencing disease progression who are at higher risk for emotional distress and the reciprocal effects that can have on disease status.

Objectives

To evaluate factors which influenced whether or not patients with MS received psychotherapy services through the BM department within the first year after their first neurology appointment.

Method

Data Pull

Data for this study was retrospectively gathered from electronic medical records kept by the Cleveland Clinic as part of the Knowledge Program (Katzan, et al., 2011).

Participants

Patients who were diagnosed with MS, were at least 18 years old, and who seen at the Mellen Center for Multiple Sclerosis between 2010 and 2015 were included in the initial data pull. This resulted in a total of 9571 eligible participants. This was reduced to include only 3918 participants who had a specific course of MS included in their records. Of these 3918 patients, 642 (16.4%) had received BM services at any point while 505 (12.89%) had done so within one year of their first neurology appointment. Descriptive statistics for included measures are listed below grouped by whether or not participants received psychotherapy services.

	<i>No Psychology</i> # (%)	<i>Psychology</i> # (%)
Gender		
Female	2288 (69.8)	467 (72.7)
Male	988 (30.2)	175 (27.3)
Race		
White	2737 (83.5)	497 (77.4)
Black	343 (10.5)	127 (19.8)
Other	58 (1.8)	9 (1.4)
NA	138 (4.2)	9 (1.4)
Marital status		
Single	814 (24.8)	223 (36.3)
Married	2039 (62.2)	334 (52)
Other	327 (10.0)	62 (9.7)
NA	96 (2.9)	13 (2.0)
Course		
Relapsing remitting	2214 (67.6)	499 (77.7)
Primary progressive	270 (8.2)	25 (3.9)
Secondary progressive without relapses	464 (14.2)	66 (10.3)
Secondary progressive with relapses	227 (6.9)	35 (5.5)
Progressive relapsing	101 (3.1)	17 (2.6)
Transfer ability		
Transfers without assistance	2506 (76.5)	248 (36.8)
Transfers with assistance	228 (7.0)	22 (3.4)
Unable to transfer	74 (2.3)	4 (0.6)
Missing	468 (14.3)	368 (57.3)
Assist device		
None used	2168 (66.2)	228 (35.5)
Unilateral	228 (7.0)	32 (5)
Bilateral	281 (8.6)	22 (3.4)
Non-applicable, non-ambulatory	245 (7.5)	12 (1.9)
Missing	354 (10.8)	248 (54.2)
	<i>Mean (SD)</i>	<i>Mean (SD)</i>
Age	45.91 (12.47)	43.91 (11.44)
	<i>Median (Q1, Q3)</i>	<i>Median (Q1, Q3)</i>
Duration of MS	7 (2, 16)	8.5 (3, 14)
MSPS	12 (6, 18)	12 (7, 19)
EQ-5D	.76 (.55, .83)	.71 (.51, .80)
PHQ-9	7 (3, 12)	10 (5, 15)
GAD-7	6 (2, 13)	7 (4, 13)
PDI	N/A	24 (12, 37)
25FWT	5.9 (4.7, 8.2)	6.2 (4.9, 9.58)
Walking Speed (feet per second)	4.24 (3.05, 5.32)	4.03 (2.61, 5.1)
9HPT (dominant hand)	23.4 (20.1, 28.6)	23.3 (20.15, 30.33)

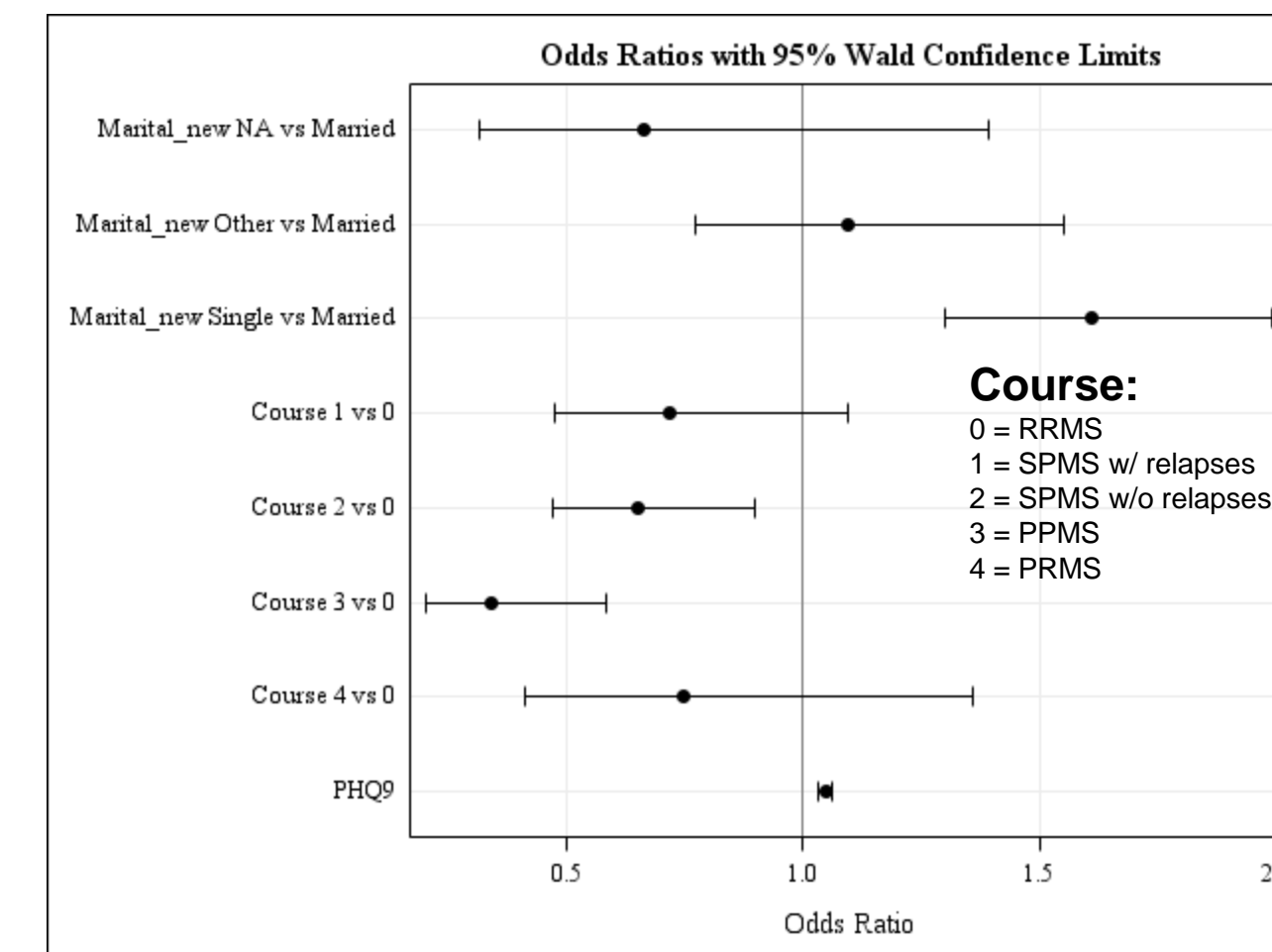
Results

Logistic regression was conducted with the dependent variable as a BM appointment within one year of the first appointment at the Mellen Center. Predictor variables included demographic information (age, sex, race, marital status), disease-specific characteristics (course of MS, ability to transfer, use of an assist device, length of time since symptom onset or diagnosis of MS, MSPS, 25FWT, and 9HPT of dominant hand), and emotional functioning (EQ-5D, PHQ-9, GAD-7) were used in univariate logistic regressions to explore the association between dependent and independent variables. Odds ratios with 95% confidence intervals were reported. A multivariable logistic regression model based on the significant variables in univariate model were included in a full model using stepwise variable selection on the full model. The significance level for entry into and exit from the model was 0.05. All analyses were conducted with SAS Version 9.4 (SAS Institute, NC)

Univariate results revealed age, MSPS, EQ-5D, PHQ-9, sex, marital status, race, MS course, and use of an assist device were predictive of participants receiving BM services within one year.

Stepwise multivariable logistic regression retained the PHQ-9 score, marital status, and course of MS as significant predictors in the final model.

Specifically, patients who were single were more likely to receive services than those who were married.



Discussion

Results from these analyses revealed several interesting findings.

Participants who were single were more likely to receive BM services within one year of their first neurology appointment than those who were married.

Participants who had Secondary Progressive MS (SPMS) without relapses or Primary Progressive MS (PPMS) were less likely to receive BM services than those who had Relapsing Remitting MS (RRMS). However, there was no difference between participants with SPMS with relapses or Progressive Relapsing MS (PRMS) and RRMS.

Increased depression was associated with greater odds of receiving BM services.

Age, sex, race, use of an assist device, EQ-5D, and MSPS score were ultimately not predictive of receipt of BM when considering marital status, depression, and course of MS.

Other measures of physical and emotional functioning (25FWT, 9HPT, ability to transfer GAD-7) were not associated at all with whether or not patients received BM within the first year following a neurology appointment.

These findings indicate that participants who have relapses associated with their disease course (SPMS with relapses, RRMS, and PRMS) are more likely to be identified to need BM services than those with a more progressive course (SPMS without relapses or PPMS). They also could indicate that being married acts as a protective factor which reduces the need for BM services. Finally, because increased depression was associated with odds of receiving BM services, this indicates the referral process may be appropriately selecting patients experiencing greater depression for additional support and treatment services.

Assessing participants marital status, course of MS, and depression at time of first neurology appointment could help improve the referral process to BM to identify participants who are most likely to require services in the future.

Future analysis will include investigating if attending neurologist plays a role in the referral process and will examine what factors influence time between first neurology appointment and first appointment with BM.