



Factors associated with perceived need for mental health care in multiple sclerosis

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ABSTRACT

Background: Within the multiple sclerosis (MS) population, depression and anxiety are highly prevalent comorbidities that are associated with adverse outcomes such as diminished quality of life and disability progression. In the general population, many people who do not meet formal diagnostic criteria for depression or anxiety disorders still identify a need for mental health care. Limited data are available regarding the perceived need for mental health care among persons with MS.

Objective: We aimed to determine factors associated with a perceived need for mental health care in the MS population.

Methods: Participants with MS completed the Hospital Anxiety and Depression Scale (HADS) to assess severity of depression and anxiety symptoms, and reported whether they perceived a need for mental health care, in the context of a larger study examining the burden of psychiatric disorders in immune-mediated inflammatory disease. Participants were also evaluated using the Structured Clinical Interview for DSM-IV-TR (SCID) to diagnose depression or anxiety disorders. Participants reported their sociodemographic characteristics, and underwent physical assessments to determine their disability status. Descriptive analyses and binary logistic regression models were used to determine sociodemographic and clinical factors associated with perceived need for mental health care.

Results: Of 255 participants enrolled, 251 were included in this analysis. Most participants were women, Caucasian, with post-secondary education, with a mean (SD) age at enrollment of 50.9 (12.9) years. They predominantly had a relapsing-remitting MS course. Nearly one-quarter of participants had a current SCID diagnosis of depression or anxiety ($n = 57$, 22.7%). Overall, 31.8% ($n = 80$) of participants reported a need for mental health care. These individuals were slightly younger at enrollment ($p = 0.037$), but otherwise did not differ with respect to sociodemographic characteristics, compared to participants not reporting this need. Those identifying need for mental health care also had an earlier age of MS symptom onset ($p = 0.011$). After adjusting for sociodemographic and clinical factors, elevated symptoms of depression (odds ratio [OR] 2.36; 95%CI: 1.06, 5.25) and anxiety (OR 6.08; 95%CI: 2.78, 13.3) were associated with an increased likelihood of reporting a need for mental health care. Any current SCID diagnosis of depression or anxiety was not associated with perceived need for mental health care after accounting for symptoms of depression and anxiety.

Conclusions: One-third of people with MS identified a need for mental health care. Symptoms of anxiety and depression, but not current diagnosed mental health disorders, were the predominant factors associated with a perceived need for care.

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1. Introduction

Multiple Sclerosis (MS) is a chronic immune-mediated disease of the central nervous system which affects nearly 100,000 Canadians (Statistics Canada, 2012) and over 1 million persons worldwide (Dean, 1994). Within the MS population, depression and anxiety disorders are highly prevalent comorbidities (Marrie et al., 2015a). Prevalence estimates of depression and anxiety disorders in the MS population vary, but lifetime estimates have been reported to be as high as 50% for depression and as high as 35% for anxiety disorders (Goldman Consensus Group, 2005; Korostil and Feinstein, 2007). The burden of these disorders exceeds that in the general population (Marrie et al., 2015c). Depression and anxiety disorders are associated with reduced health-related quality of life (Berrigan et al., 2016), increased pain (Fiest et al., 2015), cognitive dysfunction (Morrow et al., 2016), increased disability progression (McKay et al., 2018), and increased mortality (Marrie et al., 2015b).

Historically, depression in MS has been reported as underdiagnosed and undertreated although more recent studies suggest that the treatment prevalence has increased (Raissi et al., 2015). Nonetheless, in a 2015 study, more than 50% of persons with MS being treated for depression reported persistent depressive symptoms at time of assessment (Raissi et al., 2015). Anxiety disorders are also recognized as being underdiagnosed and undertreated in MS (Korostil and Feinstein, 2007). In addition to the individuals who meet formal diagnostic criteria for depression or anxiety disorders, some individuals who do not meet such criteria may still identify a need for mental health care (Sunderland and Findlay, 2013). In the Canadian general population, a perceived need for mental health care has been associated with increased levels of distress, disability, and suicidal ideation and suicide attempts independent of psychiatric disorder diagnoses, sociodemographic factors, and social supports (Sareen et al., 2005). Little is known about the perceived need for mental health care in the MS population, but this is important given the high prevalence of depression and anxiety in MS and the associated effects on outcomes.

We aimed to determine factors associated with a perceived need for mental health care in the MS population.

2. Methods

2.1. Study population

As part of a larger cohort study assessing psychiatric comorbidities in patients with chronic immune-inflammatory diseases (Marrie et al., 2018), we recruited 255 participants with neurologist-confirmed diagnoses of MS (Poser et al., 1983; McDonald et al., 2001; Polman et al., 2005; Polman et al., 2011), from the Winnipeg MS Clinic, the only clinic specializing in MS care in the province of Manitoba, Canada. Recruitment took place by telephone, mail or in clinic. All participants were aged 18 years and older, residing in Manitoba, able to provide informed consent and willing to participate in the cohort study for three years (Marrie et al., 2018). Ethics approval was obtained from the University of Manitoba Health Research Ethics Board. All participants provided written informed consent.

Participants underwent cognitive and physical assessments, completed self-administered questionnaires, and were evaluated for psychiatric status using the Structured Clinical Interview for DSM-IV-TR Axis I Disorders – Research version (SCID) (First et al., 2002). Questionnaires and clinical assessments were completed the day of enrollment. For this analysis we included participants who had completed the SCID, and the question regarding perceived need for mental health care.

2.2. Sociodemographic and clinical characteristics

Participants reported their date of birth, gender, race, income, education level, and marital status (as a measure of social support). Due

to the small number of non-White participants, race was dichotomized as White or non-White. For similar reasons, annual household income was categorized as ‘less than \$50,000’, ‘over \$50,000–\$100,000’, ‘over \$100,000’ or ‘declined response’. Education responses were categorized as ‘high school or less’, ‘college/technical/trade’ or ‘university bachelor's degree or higher’. Responses for marital status were dichotomized as ‘married/common law’, and ‘single’ (single, widowed, divorced, or separated).

Based on medical records review we classified clinical course as relapsing-remitting (RRMS), primary progressive (PPMS), or secondary progressive (SPMS) (Lublin et al., 2014). Disability was measured using the Expanded Disability Status Scale (EDSS) (Kurtzke, 1983), by either of two EDSS-certified neurologists (RAM, JJM). The total EDSS score is derived from scores for the visual, brainstem, pyramidal, sensory, cerebellar, sphincter, and cerebral functional systems, as well as an observed walk of up to 500 m. EDSS scores range from 0 (no disability) to 10 (death due to MS). We categorized EDSS scores into three groups; 0–3 (minimal to mild disability without impairment in walking), 3.5–5.5 (moderate disability), and ≥ 6 (severe disability). Cognitive status was assessed using the Symbol Digit Modalities Test (SDMT) (Smith, 2002), a test assessing information processing speed that is known to be valid and reliable in the MS population (Benedict et al., 2017).

2.3. Perceived need for mental health care

This was a single item measure where participants were asked if they perceived a need for mental health care (Arroll et al., 2005). As compared to a diagnosis of depression based on the Composite International Diagnostic Interview this question has a sensitivity of 75% and specificity of 94%. When added to a two-item screening questionnaire based on the PRIME-MD questionnaire, this question improves specificity of diagnosis from 78% to 89%. Specifically, participants were asked “Is your mood something with which you would like help?”. The three response options were “yes”, “yes but not today” or “no”. Responses of “yes” and “yes but not today” were combined to dichotomize the variable into a yes/no response.

2.4. Depression and anxiety

Participants reported whether they had ever been diagnosed with depression or an anxiety disorder by a physician. If they reported physician-diagnosed depression or an anxiety disorder, they were asked if they were currently being treated (yes or no); the type of treatment was not captured.

Severity of depression and anxiety symptoms were measured using the Hospital Anxiety and Depression Scale (HADS), which includes 14 items; 7 each assessing depression and anxiety symptoms, with item scores from 0–3 (Zigmond and Snaith 1983). Total scores for depression (HADS-D) and anxiety (HADS-A) scales range from 0 to 21. A cut-off of 8 or higher is often used to identify those with probable depression or anxiety (Honarmand and Feinstein, 2009).

At enrollment, current and lifetime psychiatric disorders were assessed using the SCID (First et al., 2002). The SCID employs a semi-structured interview and is the gold standard for psychiatric diagnostic assessment in research. Trained interviewers conducted the interviews to identify current and prior DSM-IV diagnoses, which were the prevailing criteria at the time the study was designed. For the purposes of this analysis we identified participants meeting criteria for major depressive disorder, generalized anxiety disorder, panic disorder, specific phobia disorder, obsessive-compulsive disorders and post-traumatic stress disorder. Those currently meeting threshold criteria for any of these disorders were classified as having a current diagnosis of psychiatric disorder, and those meeting SCID diagnoses previously but not currently were classified as having a past diagnosis of a psychiatric disorder.

2.4.1. Analyses

We used descriptive statistics to compare participants reporting a need for mental health care to those not reporting this need. We summarized categorical variables using frequency (percent), and continuous variables using mean (standard deviation [SD]) or median (interquartile range [IQR]) as appropriate. Bivariate analyses used chi-square tests or Fisher's exact tests for categorical variables, and student's *t*-test for continuous variables.

We constructed a series of multivariable models to assess the association between symptoms of depression and anxiety, psychiatric disorders and perceived need for mental health care: (i) HADS-A and HADS-D symptom scores; (ii) current and past DSM-IV disorders; (iii) HADS-A and HADS-D symptoms scores as well as current and past DSM-IV disorders. The HADS-D score did not meet linearity assumptions and was added to the model as a categorical variable (dichotomized at ≥ 8 based on prior studies in the MS population) (Honarmand and Feinstein, 2009). For consistency, the HADS-A score was also dichotomized. Given that current SCID diagnoses are associated with elevated symptoms of depression or anxiety, thus sharing the same causal pathway, we also examined the joint association of SCID diagnoses and elevated symptoms of depression and anxiety using a combined variable (no current SCID diagnosis and both HADS scores < 8 , current SCID diagnosis present but both HADS scores < 8 , either HADS score ≥ 8 but no SCID diagnosis, current SCID diagnosis present and either HADS score ≥ 8). All multivariable models included the following covariates: age (continuous), gender, education, marital status, disability (measured by the EDSS), and SDMT (continuous); we did not include other covariates due to the modest number of persons in the perceived need group.

2.4.2. Complementary analyses

We also evaluated the joint effects of (i) HADS-A and HADS-D symptom scores; and (ii) current SCID diagnoses of major depression and any anxiety disorder on perceived need for mental health care. For the HADS-related analyses, four groups were created where R = odds ratio (i) HADS-D < 8 and HADS-A < 8 (reference group [R_{00}]); (ii) HADS-D ≥ 8 and HADS-A < 8 [R_{10}]; (iii) HADS-D < 8 and HADS-A ≥ 8 [R_{01}]; and (iv) HADS-D ≥ 8 and HADS-A ≥ 8 [R_{11}]. To assess a possible interaction of HADS-A and HADS-D symptom scores using a departure from additivity effects (Rothman et al., 1980), the relative excess risk of interaction (RERI) was calculated as $R_{11} - R_{01} - R_{10} + 1$ (Andersson et al., 2005; Li and Chambless 2007). We used a similar approach for the SCID diagnoses.

The *c*-statistic was calculated to assess predictive value of our models (Hosmer and Lemeshow, 1989), where $c = 0.5$ indicates a model is no better at predicting the outcome than chance, and $c \geq 0.8$ indicate a strong model. We used the Hosmer and Lemeshow goodness-of-fit test to assess model fit, where $p > 0.05$ indicates a good fit (Hosmer and Lemeshow 1989).

All statistical analyses were conducted using SAS V9.4 (SAS Institute Inc., Cary, NC). *P*-values of < 0.05 were considered to indicate statistical significance.

3. Results

3.1. Participants

Approximately 43% of those approached to participate consented to do so. Of 255 participants, we included data for 251 in this analysis as two participants did not respond to the question regarding perceived need, and two participants did not complete the SCID. Overall, the participants were predominantly women, Caucasian, with post-secondary education (Table 1). Almost three-quarters had relapsing-remitting MS and either mild or moderate disability, based on the EDSS. Nearly 40% of the participants met the criteria for a past diagnosis of depression or an anxiety disorder based on the SCID. The correlation

between a current or past SCID diagnosis of depression or anxiety disorder and the dichotomized HADS scores were low (SCID-HADS-A $r = 0.15$, SCID-HADS-D $r = 0.20$). This indicated that collinearity would not limit the inclusion of both types of variables in the same multivariable model.

3.2. Perceived need for mental health treatment

Overall, 31.8% ($n = 80$) of participants reported a perceived need for mental health care. Among women, 29.9% perceived a need for mental health care as compared to 40.4% of men ($p = 0.16$) (Table 1). As compared to participants not reporting a need, participants reporting a need for mental health care were slightly younger, but otherwise did not differ with respect to sociodemographic characteristics. Those identifying a perceived need for mental health care also had an earlier age of MS symptom onset, and poorer performance on the SDMT.

We observed several differences between those identifying a need for mental health care and those who did not, with respect to symptoms of depression and anxiety, and formally diagnosed psychiatric disorders (Table 1). Mean scores on the HADS-D and HADS-A were significantly higher for those identifying a treatment need, as was the proportion with HADS scores ≥ 8 (49% compared to 12%). The group identifying a need for mental health care was also statistically significantly more likely to report current or prior diagnoses of a psychiatric disorder. Of the 80 participants who reported a need for mental health care, 64 (80%) met criteria for a current diagnosis of a psychiatric disorder or an elevated HADS-D or HADS-A score. Of the remaining 16, 9 (43.7%) met the criteria for a past diagnosis of a psychiatric disorder.

In the multivariable analyses, which included symptoms of depression and anxiety as measured by the HADS, only elevated depressive symptoms were associated with increased odds of identifying a need for mental health treatment (Table 2, Model 1). In the multivariable model (Model 2) which included SCID-diagnosed psychiatric disorders, a current SCID diagnosis of any disorder was associated with increased likelihood of reporting need for mental health care. A past SCID diagnosis was also associated with increased odds of a perceived need for mental health care but this did not reach statistical significance. In the final multivariable model (model 3), which included both psychiatric disorders and symptom levels, elevated symptoms of depression and anxiety were associated with a greater likelihood of reporting a need for treatment, but SCID diagnoses were not. Of the covariates, only age was associated with reported need for mental health care, such that those who were older were less likely to report this need. When we examined the joint effects of SCID diagnoses and elevated symptoms of depression or anxiety, as compared to individuals without a current SCID diagnosis or elevated symptoms, those with a SCID diagnosis and elevated symptoms had a nearly 12-fold increased odds of a perceived need of mental health care (adjusted OR 11.7; 95%CI: 4.78, 28.9). Those with only elevated symptoms had nearly 10-fold increased odds (adjusted OR 10.7; 95%CI: 4.81, 23.7), whereas those with a current SCID diagnosis but no elevation in depression or anxiety symptoms did not have statistically significantly increased odds (OR 2.04; 95%CI: 0.50, 8.32).

3.2.1. Complementary analyses

Table 3 illustrates the findings of the complementary analyses assessing the joint effects of depression and anxiety on the perceived need for mental health care. In the multivariable analyses which included joint symptoms of depression and anxiety as measured by the HADS, elevated depressive symptoms alone, elevated anxiety symptoms alone, and elevated symptoms of depression and anxiety were all associated with increased odds of reporting a need for mental health care (Table 3, Model 1). Based on the RERI there was no evidence of departure from additivity (RERI -1.19 ; 95%CI: -13.7 , 11.4). In the multivariable model (Table 3, Model 2) which included SCID-diagnosed psychiatric disorders, the presence of both depression and anxiety disorder

Table 1
Characteristics of the study participants.

Characteristic	Whole population N = 251	Perceived need for mental health treatment N = 80	No perceived need for mental health treatment N = 171	P-value
Sex, n (%)				
Female	204 (81.3)	61 (76.3)	143 (83.6)	0.16
Male	47 (18.6)	19 (23.7)	28 (16.4)	
Age at enrollment, mean (SD)	50.9 (12.9)	46.9 (11.0)	52.7 (13.3)	0.037
Age at symptom onset, mean (SD)	31.4 (11.3)	29.2 (10.2)	32.4 (11.7)	
Duration of MS, mean (SD)	19.5 (11.7)	17.7 (10.6)	20.3 (12.1)	0.10
Race ^a , n (%)				
White	215 (86.0)	143 (83.6)	72 (91.1)	0.11
Other	35 (14.0)	28 (16.4)	7 (8.9)	
Highest level of education, n (%)				0.068
Less than high school	10 (4.0)	5 (6.2)	5 (2.9)	
High school/GED	76 (30.3)	27 (33.8)	49 (28.6)	
College	70 (27.9)	22 (27.5)	48 (28.1)	
Technical/trade	29 (11.5)	13 (16.2)	16 (9.4)	
University bachelor's degree or higher	66 (26.3)	13 (16.2)	53 (31.0)	
Marital status, n (%)				0.78
Married/common law	179 (71.3)	58 (72.5)	50 (29.2)	
Single	72 (28.7)	22 (27.5)	121 (70.8)	0.91
Annual household income, n (%)				
< \$50,000	80 (31.9)	23 (28.8)	57 (33.3)	
\$50,000 to < \$100,000	98 (39.0)	33 (41.2)	65 (38.0)	
> \$100,000	46 (18.3)	15 (18.8)	31 (18.1)	0.26
Refused to answer	27 (10.8)	9 (11.2)	18 (10.5)	
Clinical course, n (%)				0.39
Relapsing remitting	181 (72.1)	62 (77.5)	119 (69.6)	
Secondary progressive	47 (18.7)	14 (17.5)	33 (19.3)	
Primary progressive	23 (9.2)	4 (5.0)	19 (11.1)	
Disability (EDSS), median (p25-p75)	4 (3–6)	4 (3–6)	4 (3–5.5)	
Mild: 0–3.0	89 (35.5)	31 (38.8)	58 (33.9)	
Moderate: 3.5–5.5	97 (38.6)	26 (32.5)	71 (41.5)	0.0094
Severe: ≥ 6.0	65 (25.9)	23 (28.7)	42 (24.6)	
Symbol Digit Modalities Test z-score, mean (SD)	−0.71 (1.1)	−0.98 (1.1)	−0.59 (1.1)	<0.0001
HADS-D, mean (SD)	4.9 (3.7)	7.6 (3.4)	4.4 (3.5)	
HADS-A, mean (SD)	5.9 (4.2)	9.1 (3.8)	3.6 (3.1)	
HADS-D, n (%)				<0.0001
0–7	189 (75.9)	41 (51.2)	148 (87.6)	
≥ 8	60 (24.1)	39 (48.8)	21 (12.4)	<0.0001
HADS-A, n (%)				
0–7	166 (66.4)	26 (32.5)	140 (82.3)	<0.0001
≥ 8	84 (33.6)	54 (67.5)	30 (17.7)	
Self-reported physician-diagnosed depression, n (%)	98 (39.2)	45 (57.0)	53 (31.0)	<0.0001
Currently treated for depression, n (%)	75/98 (76.5)	35/45 (77.8)	40/53 (75.5)	0.79
Self-reported physician-diagnosed anxiety, n (%)	42 (16.9)	20 (25.6)	22 (12.9)	0.0125
Currently treated for anxiety, n (%)	31/42 (73.8)	14/20 (70.0)	17/22 (77.8)	0.59
Psychiatric Diagnoses (SCID), n (%)				<0.0001
Current: depression or anxiety disorder	57 (22.7)	31 (38.8)	26 (15.2)	
Past: depression or anxiety disorder	96 (38.2)	39 (48.8)	41 (51.2)	0.019

EDSS = Expanded Disability Status Scale, HADS = Hospital Anxiety and Depression Scale; SCID = Structured Clinical Interview for DSM-IV-TR Axis I Disorders – Research version.

^a a – n = 1

diagnoses was associated with increased likelihood of reporting need for mental health care, as was a current SCID diagnosis of major depression only, but a current anxiety disorder diagnosis only was not. Again we did not observe evidence for departure from additivity as the RERI was 1.41 (95%CI: −7.23, 10.0). In the final multivariable model (Table 3, model 3), which included both symptom levels and psychiatric disorders, elevated depressive symptoms alone, elevated anxiety symptoms alone, and elevated symptoms of depression and anxiety were all associated with increased odds of identifying a need for mental health care but psychiatric disorders were not. No departure from additivity was observed either for symptoms (RERI −2.56; 95%CI: −15.2, 10.1) or psychiatric disorders (RERI 0.30; 95%CI: −2.63, 3.22).

4. Discussion

In many countries, including Canada, most persons affected by depression or anxiety receive most or all of their mental health care from primary care providers (Regier et al., 1993; Watson et al., 2005). Although persons with MS seen in the Winnipeg MS Clinic may access counseling services through the clinic, most mental health care is still delivered by primary care providers. Primary care providers report multiple barriers to delivering satisfactory mental health care (Telford et al., 2002; Trude and Stoddard 2003; Clatney et al., 2008), and patients seen in primary care often receive inadequate duration or dosing of effective treatments (Katz et al., 1998; Stein et al., 2004).

We found that nearly one-third of persons with MS reported a current perceived need for mental health care, substantially higher than that found in the general Canadian population, where the 12-month

Table 2
Adjusted odds ratios (95% confidence intervals) for factors associated with perceived need for mental health treatment.

Variable	Model 1	Model 2	Model 3
Age	0.98 (0.94, 1.01)	0.97 (0.94, 0.99)	0.98 (0.95, 1.01)
Gender			
Male	1.0	1.0	1.0
Female	0.53 (0.24, 1.19)	0.51 (0.25, 1.06)	0.51 (0.23, 1.15)
Education			
High school or less	1.0	1.0	1.0
College/technical/trade	0.67 (0.31, 1.46)	0.82 (0.41, 1.63)	0.64 (0.29, 1.40)
University	0.51 (0.21, 1.24)	0.42 (0.19, 0.97)	0.50 (0.20, 1.24)
Marital status			
Single	1.0	1.0	1.0
Married	1.19 (0.56, 2.51)	1.39 (0.70, 2.74)	1.20 (0.57, 2.54)
Disability (EDSS)			
Mild 0–3	1.0	1.0	1.0
Moderate 3.5–5.5	0.62 (0.27, 1.44)	0.78 (0.37, 1.68)	0.63 (0.27, 1.46)
Severe ≥ 6.0	1.22 (0.45, 3.31)	1.57 (0.62, 3.94)	1.23 (0.45, 3.34)
Symbol Digit Modalities Test	0.90 (0.66, 1.25)	0.75 (0.56, 1.02)	0.88 (0.63, 1.23)
HADS-D			
0–7	1.0	–	1.0
≥ 8	2.50 (1.16, 5.41)		2.32 (1.04, 5.17)
HADS-A			
0–7	1.0	–	1.0
≥ 8	5.97 (2.78, 12.8)		5.88 (2.67, 12.9)
Any depression/anxiety diagnosis (SCID)			
None	–	1.0	1.0
Current		3.55 (1.71, 7.37)	1.28 (0.52, 3.15)
Past		1.57 (0.62, 3.94)	1.49 (0.66, 3.37)
c-statistic	0.82	0.75	0.82
HLGOF χ^2	5.82, $p = 0.67$	11.1, $p = 0.20$	6.10, $p = 0.64$

EDSS = Expanded Disability Status Scale, HADS = Hospital Anxiety and Depression Scale, HLGOF = Hosmer Lemeshow Goodness of Fit.

Table 3
Adjusted odds ratios (95% confidence intervals) for joint effects of depression and anxiety on perceived need for mental health treatment.

Variable	Model 1 ^a	Model 2 ^a	Model 3 ^a
HADS			
HADS-D and HADS-A 0–7	1.0	–	1.0
HADS-D ≥ 8	6.30 (1.85, 21.4)		6.28 (1.84, 21.5)
HADS-A ≥ 8	9.15 (3.74, 22.4)		8.88 (3.58, 22.1)
HADS-D and HADS-A ≥ 8	13.3 (5.72, 30.8)		11.6 (4.54, 29.7)
Any depression/anxiety diagnosis (SCID)			
None	–	1.0	1.0
Depression		3.72 (1.10, 12.6)	1.37 (0.36, 5.26)
Anxiety		1.70 (0.73, 3.97)	0.94 (0.34, 2.57)
Depression and anxiety		5.83 (1.59, 21.4)	1.61 (0.36, 7.24)
c-statistic	0.82	0.75	0.83
HLGOF χ^2	5.03, $p = 0.75$	8.30, $p = 0.40$	3.49, $p = 0.90$

^a Adjusted for age, gender, education, marital status, disability, SDMT.

prevalence of perceived need reportedly ranges from 11.6% to 17% (Sareen et al., 2005). Although the proportion reporting this need in our sample is much higher than those found in general population studies, the finding is consistent with studies showing that the prevalence of depression and anxiety disorders in the MS population is two to four-fold higher than the general population (Patten et al., 2017).

We observed higher rates of current and lifetime psychiatric disorders amongst MS participants reporting a need for mental health care, compared to those not identifying a treatment need, with major depressive disorder (MDD) being the most prevalent diagnosis, followed by generalized anxiety disorder (GAD) (data not shown). Of the 80 reporting a need for mental health care, 59% met SCID criteria for a disorder, and 48.8% had elevated HADS-D scores. Of those with elevated HADS-D scores 23 (51.1%) reported physician-diagnosed depression of whom 82.6% were being treated. This suggests that under-treatment of depression may not be as common as found in previous studies (Mohr et al., 2006). However, we observed a large gap between number of participants meeting the threshold for clinically significant anxiety symptoms as defined by HADS-A scores (54, 67.5%) and the number of patients reporting treatment (14, 26%) in the perceived need group. This suggests that anxiety, in particular, remains undertreated (Korostil and Feinstein 2007), which may adversely affect outcomes such as quality of life (Berrigan et al., 2016). Notably, the effects of depression and anxiety symptoms on perceived need were additive not synergistic. Collectively, our findings suggest that the persons with MS in our sample reporting a perceived need for mental health care include a mixture of individuals with symptoms of depression or anxiety who are undiagnosed and/or untreated, and individuals who are currently being treated. This latter group may include those with inadequate treatment or with other sources of dissatisfaction with care.

In the MS population, demographic and clinical factors are associated with the risk of psychiatric disorders. Lower socioeconomic status has been associated with increased risk of psychiatric disorders, and an increased risk that these disorders will remain undiagnosed and under-treated (Pham et al., 2018). Although female sex is associated with an increased risk of depression and anxiety in MS, the difference between sexes is less pronounced than in the general population, and may not be associated with symptoms of depression over time (Beal et al., 2007). Disease course has not been consistently associated with the risk of a mood disorder (Zabad et al., 2005; Lorefice et al., 2015), but impaired mobility increases the risk of depression (Berzins et al., 2017).

We did not find that lower socioeconomic status was associated with reported need for mental health care but this may reflect the size of our sample. Moreover, disease-related characteristics including current course, duration of MS (on univariate analysis), and disability status (on multivariable analysis) were also not associated with a perceived need for mental health care. We did find that younger age was associated with a perceived need for care, a finding consistent with that in the Canadian general population (Sareen et al., 2005), and with the association of younger age with an increased incidence of depression and anxiety disorders in the MS population (Beal et al., 2007; Garfield and Lincoln, 2012). This higher perceived need for mental health care in younger people with MS could reflect a desire for support around issues related to coping with a chronic illness, rather than a mental health diagnosis.

We found that after accounting for sociodemographic factors and MS-related disability, the strongest predictors of need for mental health care were elevated current symptoms of anxiety and depression. Among individuals with a SCID diagnosis of anxiety disorders or depression, a perceived need for mental health care was found only if elevated symptoms of anxiety or depression were also present. Individuals without a SCID diagnosis but elevated symptoms also perceived a need for mental health care. Perceived need for mental health care, regardless of whether diagnostic criteria for a mental health disorder are met, is associated with reduced quality of life, and suicidality (Sareen et al.,

2005). This suggests that elevated symptoms of depression and anxiety warrant attention, regardless of whether or not criteria for a formal diagnosis are met. Conversely, some individuals may meet diagnostic criteria for a disorder but not experience enough impairment to perceive a need for care. Such discordance between severity of impairment, and having all of the necessary symptoms to meet diagnostic criteria is well-recognized (Angold et al., 1999).

Our study has several limitations. Most of the study participants had relapsing-remitting MS thus our findings may not generalize well to individuals with progressive MS. As expected, a relatively high proportion of participants were women, and women are more likely to participate in research studies than men (Galea and Tracy, 2007), thus our findings may not generalize as well to men with MS. We did not evaluate whether perceived need for mental health care was influenced by perceived need for neurologic care, or care for other comorbid conditions. We also did not assess the type of mental health care currently received, or what care was desired. However, the high perceived need, even among participants who were currently being treated, suggests that treatment may be inadequate in some way. Treatment of symptoms or disorders could be inadequate, or the scope of their treatment could be inadequate; that is, they might need more support, family interventions, or other interventions. We also did not assess the barriers to mental health treatment. In the general population, reported barriers to accessing mental health care included attitudinal barriers such as believing the problem would “get better by itself”, and structural barriers including financial concerns and inability to get an appointment (Sareen et al., 2007), but these may differ in the MS population. Future studies should evaluate these issues, as well as the health effects of unmet need for mental health care.

In summary, nearly one-third of people with MS in this study perceived a need for mental health care. Symptoms of anxiety and symptoms of depression were the predominant factors associated with an identified need for treatment. This need for treatment identified by individuals with elevated symptoms, in the absence of meeting formal criteria for a diagnosis of a psychiatric disorder, suggests that such symptoms are clinically relevant. Incorporating validated screening tools for these symptoms (Marrie et al., 2017) into practice along with a question regarding need for mental health care may assist health care providers in better meeting the mental health needs of people with MS.

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Conflicts of interest

Justine Orr has no disclosures.

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