

Prevalence and Correlates of Body Image Dissatisfaction in Patients with Multiple Sclerosis

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Background

- Body image dissatisfaction (BID) involves a discrepancy between a person's ideal body and perceived body, and it is a strong predictor of undesirable outcomes such as disordered eating behaviors, depression, and low self-esteem.
- MS frequently involves physical changes to mobility or functioning, including loss of function or feeling in limbs and sexual and cognitive dysfunction, changes which would likely increase BID.
- About 30% of individuals with MS have symptoms of depression, which correlates strongly with BID.
- Very little research has examined this relationship; two studies are more than 25 years old, and all used different measures of body image.
- No studies examined the impact of other factors (such as symptom severity, classification of MS, and medication) on body image in this population.
- **Study objectives:**
 - Exploring factors that predict BID in patients with MS
 - Examining levels of BID in patients with MS, compared with community norms
 - Gaining valuable information for screening and future treatment development.

Measures

- **BID.** The 16-item short-form B of the Body Shape Questionnaire (BSQ) is a validated and reliable ($\alpha = .95$).version of the original 34-item BSQ..
- **Demographics.** Data on patient age, body mass index (BMI), gender, marital status, race/ethnicity, and socioeconomic status/zip code were collected from patients' medical record charts.
- **MS-specific variables.** Data on disease modifying therapy (DMT) use, duration of MS, and classification of MS, as well as NeuroQoL Upper and Lower Extremity and Stigma T-scores, were collected via computerized testing at each visit.

Statistical Analyses/Results

- All computations were done in R, version 3.4.1. All tests were two-sided and p-values less than 0.05 were considered statistically significant.
- **Sample**
 - 151 patients (66.2% women, 73.5% white) 18 and older ($M = 46.1$, $SD = 11.8$), diagnosed with MS and receiving medical care at the Cleveland Clinic Mellen Center for MS between 11/28/17 and 4/2/18.
- **Group Differences**
 - Patients were divided into groups based on BSQ score ($<52 =$ "No/Mild Concern" versus $>52 =$ "Moderate/Marked Concern").
 - Group comparisons were made using two-sample t-tests or Wilcoxon tests for continuous variables and Fisher exact tests for categorical variables.
 - Patients with Moderate/Marked Concern were more likely to be female and had higher median BMI, higher median PHQ-9 scores, and higher mean NeuroQoL Stigma T-scores. There were no age differences between groups (Figure 1).

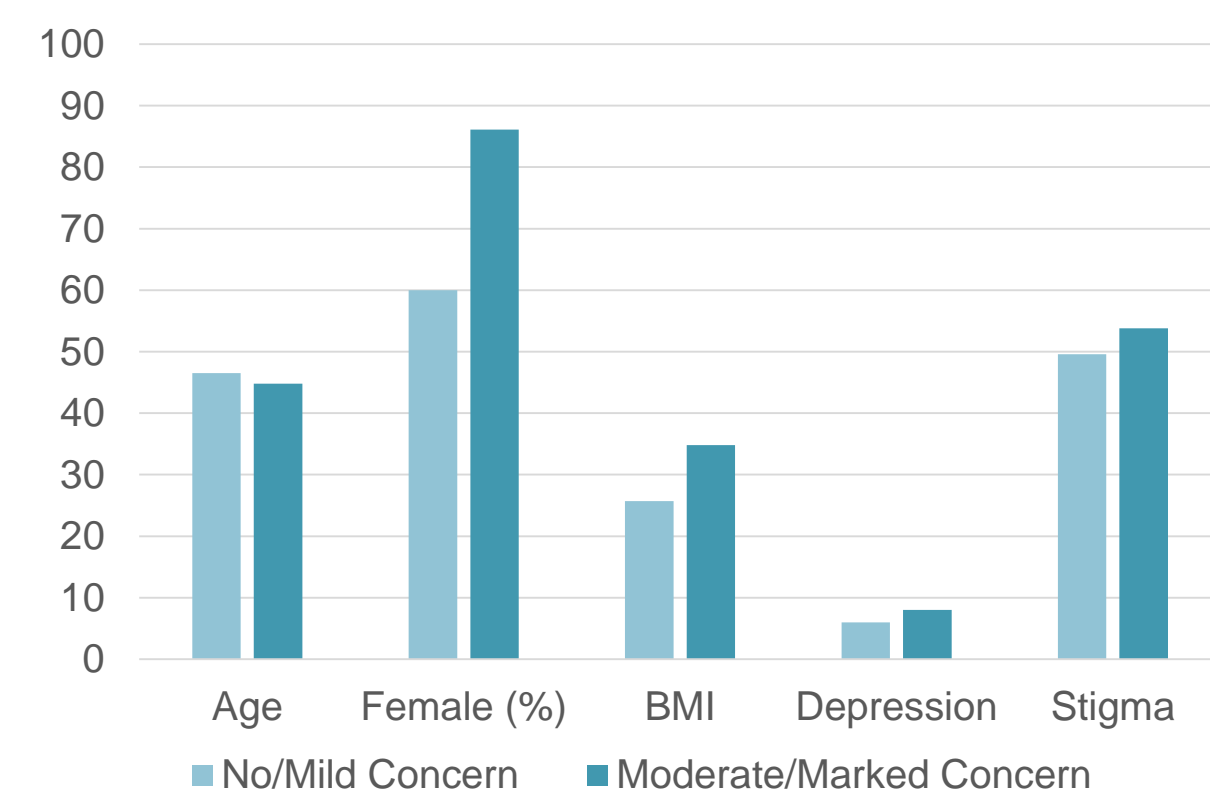


Figure 1. Age, Sex, BMI, Depression, and Stigma Scores by Level of Body Image Concern

One-sample t-test

- A one-sample t-test was performed to test whether the sample mean differed from the mean identified in previous literature.(38.36). We corrected for multiple testing using Holm's method.
- Patients' average score was not significantly different from the population mean ($p = .61$).
- When examined separately, scores for men were significantly different from the population ($p = .019$), but scores for women were not (Figure 2).

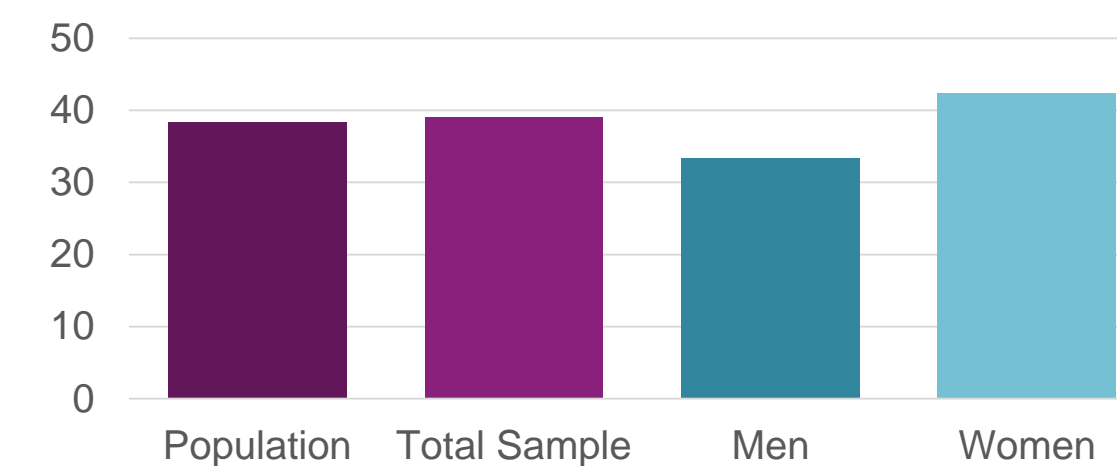


Figure 2. BID in Sample vs. Population

Hierarchical Linear Regression (HLR)

- HLR was conducted with BSQ as the dependent variable (Table 1).
- Adjusted R^2 values were computed for all models, and a Wald test was performed to determine model improvement with added steps.
- First step included variables shown in the literature to predict BID and any variables found in preliminary analyses to predict BID.
 - All variables (except age) were significant predictors of total BSQ score ($R^2_{adj} = 0.323$).
- Second step included MS-specific variables as well as NeuroQoL T-scores.
 - No significant improvement in model fit ($p = 0.158$), and no additional variables were statistically significant ($\Delta R^2_{adj} = .022$).
- After adjusting for other covariates, men showed lower BSQ scores than women.
- Higher BMI and PHQ-9 scores predicted higher BSQ scores.

Table 1. Results of HLR Analysis

	First Step (Adjusted $R^2 = 0.323$)		Second Step (Adjusted $R^2 = 0.345$)	
	Beta Estimate (95% CI)	P-value	Beta Estimate (95% CI)	P-value
Age (per year)	-0.09 (-0.29, 0.12)	0.399	-0.10 (-0.36, 0.16)	0.449
Male (vs. Female)	-8.97 (-14.03, -3.91)	< 0.001	-8.29 (-13.44, -3.14)	0.002
Body Mass Index (per kg/m ²)	0.99 (0.64, 1.34)	< 0.001	0.95 (0.59, 1.32)	< 0.001
PHQ-9 Score (per 1 unit)	0.74 (0.28, 1.21)	0.002	0.60 (0.07, 1.12)	0.027
Any DMT Use	-	-	2.67 (-5.68, 11.02)	0.528
Years Since MS Diagnosis	-	-	0.21 (-0.14, 0.55)	0.236
Progressive MS Course	-	-	-3.96 (-11.19, 3.26)	0.280
NeuroQoL Lower Extremity T-Score (per 1 unit)	-	-	0.18 (-0.25, 0.61)	0.402
NeuroQoL Upper Extremity T-Score (per 1 unit)	-	-	-0.30 (-0.78, 0.19)	0.224
NeuroQoL Stigma T-Score (per 1 unit)	-	-	0.32 (-0.12, 0.76)	0.155

Discussion/Conclusions

- Higher BID was associated with being female and with higher BMI, depression, and experience of stigma.
- BID is a concern for patients with MS, with approximately the same levels of BID as in the general population.
- No MS-specific variables were found to predict higher BID after controlling for significant variables.
- Given the evidence in the literature of the negative effects of BID on health behaviors and mood disorders, it is important to continue to explore this area to determine whether other factors play a role.
- Increasing the sample size would help determine whether low power contributed to the nonsignificant results of the HLR.