

Table e-1. Association between pseudobulbar affect (PBA) and disease and multiple sclerosis (MS) symptom severity.

PBA defined as CNS-LS ≥ 17 with no current depression¥ (200 cases of PBA)						
	No. of patients in each category			Moderate vs. Mild*	Severe vs. Mild	Per 1 point increase in score**
	Mild	Moderate	Severe	Odds Ratio* (95% CI)	Odds Ratio (95% CI)	Odds Ratio (95% CI)
PDDS ^o	53/2271	79/2598	67/3021	1.42 (0.98-2.06)	1.13 (0.75-1.70)	1.10 (0.86-1.40)
Mobility	61/2465	88/3254	44/2162	1.20 (0.85-1.70)	0.93 (0.60-1.44)	1.09 (0.85-1.39)
Hand	97/4466	76/2583	25/839	1.37 (1.01-1.87)	1.48 (0.93-2.35)	1.42 (1.11-1.83)
Vision	112/5184	76/2393	9/309	1.41 (1.04-1.91)	1.26 (0.63-2.54)	1.36 (1.06-1.75)
Fatigue	47/2097	108/3811	41/2019	1.21 (0.86-1.72)	0.84 (0.54-1.29)	0.91 (0.72-1.17)
Cognition	94/4467	91/2944	14/514	1.37 (1.01-1.84)	1.18 (0.67-2.11)	1.44 (1.12-1.84)
Spasticity	87/4259	88/2758	25/895	1.49 (1.10-2.03)	1.31 (0.82-2.08)	1.44 (1.12-1.84)
Sensory	107/4559	70/2521	23/846	1.12 (0.82-1.54)	1.10 (0.69-1.76)	1.12 (0.87-1.45)
PBA defined as CNS-LS ≥ 17 adjusted for depression severity (574 cases of PBA)						
	No. of patients in each category			Moderate vs. Mild	Severe vs. Mild	Per 1 point increase in score
	Mild	Moderate	Severe	Odds Ratio [†] (95% CI)	Odds Ratio [†] (95% CI)	Odds Ratio (95% CI) [‡]
PDDS ^o	106/2218	254/2423	213/2875	1.36 (1.05-1.77)	1.16 (0.88-1.52)	1.08 (0.93-1.25)
Mobility	125/2401	313/3029	131/2075	1.34 (1.06-1.71)	0.99 (0.74-1.32)	1.08 (0.93-1.27)
Hand	204/4359	266/2393	99/765	1.60 (1.31-1.97)	1.80 (1.36-2.38)	1.47 (1.26-1.73)
Vision	240/5056	279/2190	50/268	1.68 (1.39-2.04)	1.92 (1.34-2.74)	1.62 (1.38-1.90)
Fatigue	65/2079	267/3652	241/1819	1.33 (0.99-1.80)	1.48 (1.07-2.05)	1.18 (1.01-1.38)
Cognition	154/4407	313/2722	106/422	1.72 (1.38-2.14)	2.77 (2.04-3.75)	1.87 (1.59-2.19)
Spasticity	180/4166	279/2567	111/809	1.56 (1.27-1.92)	1.66 (1.26-2.18)	1.43 (1.28-1.69)
Sensory	193/4473	245/2346	135/734	1.49 (1.21-1.84)	2.17 (1.68-2.82)	1.59 (1.36-1.87)
PBA defined as CNS-LS ≥ 17 unadjusted for depression severity (574 cases of PBA)						
	No. of patients in each category			Moderate vs. Mild	Severe vs. Mild	Per 1 point increase in score
	Mild	Moderate	Severe	Odds Ratio* (95% CI)	Odds Ratio (95% CI)*	Odds Ratio (95% CI)**
PDDS ^o	106/2218	254/2423	213/2875	2.15 (1.68-2.75)	1.77 (1.37-2.31)	1.36 (1.17-1.57)
Mobility	125/2401	313/3029	131/2075	2.05 (1.64-2.58)	1.42 (1.08-1.87)	1.38 (1.19-1.60)
Hand	204/4359	266/2393	99/765	2.36 (1.94-2.87)	2.96 (2.27-3.86)	2.26 (1.94-2.63)
Vision	240/5056	279/2190	50/268	2.53 (2.10-3.04)	3.68 (2.62-5.17)	2.50 (2.14-2.92)
Fatigue	65/2079	267/3652	241/1819	2.28 (1.72-3.02)	3.94 (2.96-2.56)	2.35 (2.02-2.74)
Cognition	154/4407	313/2722	106/422	2.96 (2.42-3.63)	6.35 (4.83-8.37)	3.53 (3.02-4.13)
Spasticity	180/4166	279/2567	111/809	2.39 (1.96-2.92)	3.06 (2.36-3.96)	2.30 (1.97-2.68)

Sensory	193/4473	245/2346	135/734	2.32 (1.90-2.83)	4.13 (3.24-5.26)	2.66 (2.28-3.11)
‡More stringent definition for PBA[+] (CNS-LS scores ≥17 and no depression; n=200) °PDDS: Patient-derived disease steps						
*from multinomial model adjusted for age, symptom duration (quartiles), sex, race (Caucasian, African-American, Other), and income (<\$30,000, \$30,000-\$50,000, ≥\$50,000, I prefer not to answer) **from proportional odds model adjusted for age, symptom duration (quartiles), sex, race (Caucasian, African-American, Other), and income (<\$30,000, \$30,000-\$50,000, ≥\$50,000, I prefer not to answer)						
†from multinomial model adjusted for <u>depression severity</u>, age, symptom duration (quartiles), sex, race (Caucasian, African-American, Other), and income (<\$30,000, \$30,000-\$50,000, ≥\$50,000, I prefer not to answer) ‡from proportional odds model adjusted for <u>depression severity</u>, age, symptom duration (quartiles), sex, race (Caucasian, African-American, Other), and income (<\$30,000, \$30,000-\$50,000, ≥\$50,000, I prefer not to answer)						