The 24-Year Course of Symptomatic Disorders in Patients With Borderline Personality Disorder and Personality-Disordered Comparison Subjects:

Description and Prediction of Recovery From BPD

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Abstract

Objectives: Our first objective was to compare the prevalence of symptomatic disorders (formerly Axis I disorders) over 24 years of prospective follow-up among patients with borderline personality disorder (BPD) and other personality-disordered comparison subjects as well as recovered vs nonrecovered borderline patients. Our second objective was to assess the relationship between the absence of 5 major classes of symptomatic disorders over time and the likelihood of concurrent recovery among borderline patients.

Methods: The McLean Study of Adult Development (MSAD) is a naturalistic prospective follow-up study of 362 inpatients assessed at 12 contiguous 2-year follow-up waves. Symptomatic disorders were assessed at each follow-up using the Structured Clinical Interview for *DSM-III-R* Axis I Disorders. Generalized estimating equations were used to assess all outcomes. Data were collected from June 1992 to December 2018.

Results: Patients with BPD had significantly higher rates of all 5 types of disorders studied than comparison subjects. However, the prevalence of these disorders declined significantly over time at similar rates for both study groups. This finding was similar for recovered and nonrecovered borderline patients. When the absence of these types of comorbid disorders was used to predict recovery status, substance use disorders were a substantially stronger predictor of recovery than the other 4 classes of disorders (relative risk ratio: 2.53, $P < .001$).

Conclusions: The results of this study suggest that symptomatic disorders co-occur less commonly with BPD over time, particularly for recovered borderline patients. They also suggest that the absence of substance use disorders is the strongest predictor of achieving recovery from BPD.

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M ental health providers have long believed that a high percentage of patients with borderline personality disorder (BPD) meet lifetime criteria for a variety of symptomatic (formerly Axis I) disorders.[1] A number of comprehensive cross-sectional studies conducted in the 1980s and 1990s have documented this clinical impression by finding high rates of co-occurring mood, anxiety, substance use, and eating disorders in borderline outpatients and inpatients.[2–4]

Mental health providers also believe that the presence of certain co-occurring conditions impedes the course of the disorder, both symptomatically and psychosocially.

All told, 17 small-scale, short-term prospective studies[5–24] and 4 long-term, large-scale follow-back studies[25–29] of the course of BPD have been conducted. Only 5 of these short-term studies[9–11,17,24] and 2 of the long-term studies[28,29] have assessed any aspect of symptomatic disorder psychopathology. Taken together, these studies found that major depression/dysthymic disorder[9–11,17,24,28,29] and substance use disorders[9,17,24,28] were common at follow-up.

In the early 1990s, the National Institute of Mental Health funded 2 methodologically rigorous prospective studies of the long-term course of BPD—the McLean

Clinical Points

- Prior to this study, there were no long-term findings on the prospective course of symptomatic disorders in patients with borderline personality disorder (BPD).
- The chronicity of mood and anxiety disorders suggests that current treatments are less effective than hoped or thought.
- Substance use disorders, given their particularly strong relationship to recovery from BPD, need to be treated whenever they appear.

Study of Adult Development (MSAD)[30] and the Collaborative Longitudinal Personality Disorders Study (CLPS).[31] The former study assessed the 24-year course of BPD,[32] while the latter study assessed the 10-year course of BPD.[33] At baseline, MSAD found high rates of mood disorders and anxiety disorders, with high but lesser rates of substance use disorders, posttraumatic stress disorder (PTSD), and eating disorders.[34] CLPS found a very similar pattern of baseline comorbidity.[35]

Over the first 6 years of follow-up, borderline patients in MSAD were found to have significantly declining but still high rates of symptomatic disorders, particularly for nonremitted borderline patients.[36] In the CLPS study, BPD over the first 2 years of follow-up was significantly associated with major depression and PTSD but not anxiety, substance use, or eating disorders.[37]

The current study is the first study of a well-defined sample of borderline patients and personality-disordered comparison subjects to systematically assess a full array of co-occurring symptomatic disorders over 24 years of prospective follow-up or 12 contiguous 2-year time periods.

METHODS

The current study is part of the MSAD, a multifaceted longitudinal study of the course of BPD.[38] Study entrance began in June 1992 and continued until December 1995. The last follow-up interview was conducted in December 2018. The methodology of this study, which was reviewed and approved by the McLean Hospital Institutional Review Board, has been described in detail elsewhere.[38] Briefly, all subjects were initially inpatients at McLean Hospital in Belmont, Massachusetts. Each patient was first screened during their index admission to determine that they (1) were between the ages of 18 and 35; (2) had a known or estimated IQ of 71 or higher; and (3) had no history or current symptoms of schizophrenia, schizoaffective disorder, bipolar I disorder, or an organic condition that could cause psychiatric symptoms.

After the study procedures were explained, written informed consent was obtained. Each patient then met with a master's-level interviewer blind to the patient's clinical diagnoses for a thorough diagnostic assessment. Three semistructured diagnostic interviews were administered. These diagnostic interviews were as follows: (1) the Structured Clinical Interview for *DSM-III-R* Axis I Disorders,[39] (2) the Revised Diagnostic Interview for Borderlines (DIB-R),[40] and (3) the Diagnostic Interview for *DSM-III-R* Personality Disorders (DIPD-R).[41] The interrater and test-retest reliability of all 3 of these measures have been found to be good-excellent.[42,43]

To be included in the borderline group, patients had to meet both DIB-R and *DSM-III-R* criteria for BPD. To be included in the comparison group, patients had to not meet either criteria set for BPD but had to meet criteria for at least 1 non-BPD *DSM-III-R* personality disorder.

At each of 12 follow-up waves, separated by 24 months, our diagnostic battery was readministered blind to previous diagnoses and after informed consent was obtained. The follow-up interrater reliability (within 1 generation of follow-up raters) and follow-up longitudinal reliability (from 1 generation of raters to the next) of these 3 measures have also been found to be good-excellent.[42,43]

Definition of Recovery From BPD

We defined recovery as a concurrent symptomatic remission of BPD, having at least one emotionally sustaining relationship with a close friend or life partner/spouse, and being able to work or go to school consistently, competently, and on a full-time basis (which included being an unpaid caregiver for others) during a 2-year follow-up interval.

Statistical Analyses

The generalized estimating equations (GEE) approach was used in longitudinal analyses to assess the prevalence rate of 5 types of disorders and 15 specific disorders over 24 years of follow-up. A log-linear model for change in this outcome included the effects of diagnostic group (or recovery status), time, and their possible interaction; these GEE analyses included a quadratic time trend to allow for the discernible nonlinear decrease in these outcomes over time. The inclusion of the diagnostic group (or recovery status) by time interaction terms in the models allows for a direct comparison of the patterns of change over time between the 2 groups. Postestimation tests were used to determine if the interactions were significant. If not, they were dropped from the final model. The GEE method used for these analyses appropriately accounts for the correlation among the repeated measures of these symptomatic disorders over time. When exponentiated, regression coefficients from the models have

interpretations in terms of relative differences and relative changes in the prevalence rates.

The GEE approach was also used to determine the predictive relationship between the absence of the 5 symptomatic conditions/categories over time and the outcome of recovery from BPD. The Bonferroni correction used in this study for Table 1 was $P < .003$ (0.05/20), and the Bonferroni correction for Tables 2 and 3 was $P < .01$ (0.05/5).

RESULTS

Subjects

Baseline diagnostic and demographic data were obtained during each subject's index admission.[38] Two hundred ninety patients met both DIB-R and *DSM-III-R* criteria for BPD, and 72 met *DSM-III-R* criteria for at least 1 nonborderline personality disorder (and neither criteria set for BPD). Of these 72 comparison subjects, 4% met *DSM-III-R* criteria for an odd cluster personality disorder, 33% met *DSM-III-R* criteria for an anxious cluster personality disorder, 18% met *DSM-III-R* criteria for a nonborderline dramatic cluster personality disorder, and 53% met *DSM-III-R* criteria for personality disorder not otherwise specified (which was operationally defined in the DIPD-R as meeting all but 1 of the required number of criteria for at least 2 of the 13 Axis II disorders described in *DSM-III-R*).

All demographic data at each time period were assessed using a semistructured interview developed specifically for this purpose for this study. In terms of baseline demographic data, 77% (N = 279) of the subjects were female, 361 were cis-gendered men and women, and 87% (N = 315) were white, 20 (6%) were African American, 9 (3%) were Hispanic, 8 (2%) were Asian, and 10 (3%) were biracial or of other racial or ethnic backgrounds. The average age of the subjects was 27.0 years (SD = 6.3), their mean socioeconomic status was 3.3 (SD = 1.5) (where 1 = highest and 5 = lowest),[44] and their mean Global Assessment of Functioning score was 39.8 (SD = 7.8) (indicating major impairment in several areas, such as work or school, family relations, judgment, thinking, or mood).[45]

In terms of continuing participation, 83% (N = 206/249) of surviving borderline patients (15 died by suicide and 26 died of other causes) were reinterviewed at all 12 follow-up waves. A similar rate of participation was found for comparison subjects with another personality disorder, with 79% (N = 53/67) of surviving patients in this study group (1 died by suicide and 4 died of other causes) being reassessed at all 12 follow-up waves.

Longitudinal Results

Table 1 details the prevalence rates of 5 categories of symptomatic disorders (mood, substance use, anxiety,

and eating disorders as well as PTSD representing trauma-related disorders) and 15 specific disorders over 24 years of prospective follow-up for patients with BPD and personality-disordered comparison subjects. It was found that borderline patients had significantly higher rates of each of these 5 types of symptomatic conditions than personality-disordered comparison subjects. It was also found that the prevalence of both study groups declined at a significant but similar rate over time for each of these 5 types of symptomatic conditions (indicating that the diagnostic group by time interaction terms was not significant and was dropped from the model), At all follow-up times, borderline patients had about a 50% greater prevalence of mood disorders (relative risk ratio [RRR] = 1.45) than personality-disordered comparison subjects, almost a 2 times greater prevalence of substance use disorders, anxiety disorders, and eating disorders, and about 2.6 times greater prevalence of PTSD. In terms of rates of decline over time for both groups considered together, the prevalence of mood disorders decreased 40% over time (RRR = [1−0.60] × 100%), the rate of substance use disorders decreased 70%, the rate of PTSD decreased 68%, the rate of anxiety disorders decreased 43%, and the rate of eating disorders declined 73%.

In terms of specific disorders, it was found that borderline patients had significantly higher rates of 8 disorders than personality-disordered comparison subjects: major depression, dysthymic disorder, drug abuse/dependence, panic disorder, social phobia, obsessive-compulsive disorder, generalized anxiety disorder, and eating disorder not otherwise specified (mostly binge eating disorder). It was also found that both study groups declined at a significant but similar rate over time for 10 disorders: major depression, dysthymic disorder, alcohol abuse/dependence, drug abuse/dependence, panic disorder, social phobia, simple phobia, obsessive-compulsive disorder, bulimia, and eating disorder not otherwise specified. In addition, models did not converge for 3 disorders due to the sparsity of cases among the personality-disordered comparison subjects: bipolar I and II disorders and anorexia nervosa.

Table 2 details the prevalence rates of mood, substance use, anxiety, and eating disorders as well as PTSD over 24 years of prospective follow-up for recovered borderline patients (n = 155) and nonrecovered borderline patients (n = 120). In terms of changes in the prevalence of disorders over 24 years of follow-up, both the nonrecovered and recovered borderline patients had statistically significant decrease over time for all 5 categories of disorders. In terms of decreases in the prevalence of mood disorders over 24 years of follow-up, nonrecovered borderline patients had a decrease of 17% ([1−0.83] × 100%), while recovered borderline patients had a decrease of 49% ([1− (0.83 × 0.61)] × 100%). For substance use disorders,

Table 1.
Symptomatic Disorders Experienced by Patients With BPD and Comparison Subjects With Other Personality Disorders Followed Prospectively for 24 Years

% (N)	BL	2 y	4 y	6 y	8 y	10 y	12 y	14 y	16 y	18 y	20 y	22 y	24 y	RRR Dx ΔTime24[a]	95% CI Dx ΔTime24	P value Dx ΔTime24
Any mood disorder																
BPD	96.9 (281)	84.7 (233)	74.0 (199)	75.0 (198)	73.7 (188)	71.1 (177)	61.1 (149)	62.2 (148)	60.6 (140)	63.4 (142)	60.0 (132)	55.6 (120)	60.0 (123)	1.45	1.27, 1.65	<.001
OPD	79.2 (57)	62.7 (42)	51.6 (33)	49.2 (31)	38.7 (24)	45.9 (28)	45.0 (27)	40.7 (24)	46.6 (27)	37.9 (22)	22.4 (13)	23.2 (13)	31.5 (17)	0.60	0.54, 0.66	<.001
Major depression																
BPD	86.6 (251)	68.7 (189)	61.3 (165)	61.0 (161)	56.1 (143)	51.4 (128)	45.5 (111)	41.6 (99)	44.6 (103)	41.5 (93)	41.8 (92)	42.1 (91)	48.3 (99)	1.31	1.13, 1.51	<.001
OPD	76.4 (55)	56.7 (38)	43.8 (28)	36.5 (23)	32.3 (20)	37.7 (23)	38.3 (23)	33.9 (20)	43.1 (25)	31.0 (18)	20.7 (12)	21.4 (12)	27.8 (15)	0.52	0.46, 0.59	<.001
Dysthymic disorder																
BPD	44.5 (129)	33.8 (93)	28.6 (77)	40.2 (106)	36.1 (92)	31.3 (78)	28.3 (69)	30.7 (73)	25.5 (59)	30.4 (68)	17.3 (38)	15.7 (34)	16.6 (34)	1.73	1.28, 2.35	<.001
OPD	29.2 (21)	23.9 (16)	20.3 (13)	23.8 (15)	14.5 (9)	14.8 (9)	11.7 (7)	10.2 (6)	12.1 (7)	13.8 (8)	1.72 (1)	3.6 (2)	5.6 (3)	0.36	0.29, 0.46	<.001
Bipolar I disorder																
BPD	0.0 (0)	0.7 (2)	1.5 (4)	1.1 (3)	2.4 (6)	2.8 (7)	1.6 (4)	2.9 (7)	2.6 (6)	2.7 (6)	2.7 (6)	4.2 (9)	1.0 (2)		Model did not converge	
OPD	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)			
Bipolar II disorder																
BPD	5.5 (16)	7.3 (20)	6.7 (18)	4.6 (12)	6.3 (16)	6.0 (15)	7.4 (18)	7.6 (18)	6.5 (15)	8.5 (19)	7.3 (16)	0.9 (2)	5.4 (11)		Model did not converge	
OPD	0.0 (0)	1.5 (1)	0.0 (0)	1.6 (1)	0.0 (0)	3.3 (2)	0.0 (0)	1.7 (1)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)	0.0 (0)			
Any substance use disorder																
BPD	62.1 (180)	29.8 (82)	23.8 (64)	18.9 (50)	15.3 (39)	13.7 (34)	12.7 (31)	11.3 (27)	10.4 (24)	11.2 (25)	10.9 (24)	15.3 (33)	14.6 (30)	1.76	1.34, 2.31	<.001
OPD	45.8 (33)	14.9 (10)	10.9 (7)	7.9 (5)	12.9 (8)	8.2 (5)	8.3 (5)	5.1 (3)	10.3 (6)	12.1 (7)	6.9 (4)	12.5 (7)	3.7 (2)	0.30	0.22, 0.40	<.001
Alcohol use disorder																
BPD	50.3 (146)	20.4 (56)	14.5 (39)	11.4 (30)	8.6 (22)	8.8 (22)	9.0 (22)	7.6 (18)	7.8 (18)	7.1 (16)	6.8 (15)	10.2 (22)	11.2 (23)	1.63	1.18, 2.27	.003
OPD	38.9 (28)	9.0 (6)	7.8 (5)	4.8 (3)	6.5 (4)	1.6 (1)	5.0 (3)	1.7 (1)	5.2 (3)	6.9 (4)	3.5 (2)	7.1 (4)	1.9 (1)	0.28	0.20, 0.41	<.001
Drug use disorder																
BPD	46.6 (135)	20.4 (56)	15.2 (41)	12.9 (34)	9.0 (23)	7.2 (18)	7.0 (17)	4.6 (11)	3.0 (7)	5.8 (13)	5.9 (13)	6.5 (14)	5.4 (11)	1.87	1.33, 2.63	<.001
OPD	34.7 (25)	10.5 (7)	6.3 (4)	3.2 (2)	8.1 (5)	6.6 (4)	6.7 (4)	3.4 (2)	6.9 (4)	5.2 (3)	3.5 (2)	5.4 (3)	1.9 (1)	0.17	0.11, 0.25	<.001
PTSD																
BPD	58.3 (169)	51.3 (141)	42.4 (114)	34.9 (92)	25.5 (65)	20.9 (52)	19.3 (47)	18.5 (44)	13.9 (32)	18.3 (41)	16.8 (37)	19.4 (42)	20.5 (42)	2.57	1.72, 3.84	<.001
OPD	25.0 (18)	16.4 (11)	12.5 (8)	4.8 (3)	4.8 (3)	3.3 (2)	3.3 (2)	0.0 (0)	3.5 (2)	5.2 (3)	0.0 (0)	7.1 (4)	3.7 (2)	0.32	0.26, 0.41	<.001
Any anxiety disorder																
BPD	80.3 (233)	63.6 (175)	57.3 (154)	50.7 (134)	45.9 (117)	37.8 (94)	40.2 (98)	34.9 (83)	31.6 (73)	38.4 (86)	42.3 (93)	39.8 (86)	46.8 (96)	2.01	1.59, 2.52	<.001
OPD	48.6 (35)	32.8 (22)	25.0 (16)	20.6 (13)	19.4 (12)	19.7 (12)	21.7 (13)	18.6 (11)	12.1 (7)	20.7 (12)	18.9 (11)	16.1 (9)	18.5 (10)	0.57	0.50, 0.65	<.001

(continued)

Table 1 (continued).

% (N)	BL	2 y	4 y	6 y	8 y	10 y	12 y	14 y	16 y	18 y	20 y	22 y	24 y	RRR Dx ΔTime24[a]	95% CI Dx ΔTime24	P value Dx ΔTime24
Panic disorder																
BPD	45.2 (131)	31.6 (87)	33.5 (90)	29.2 (77)	29.4 (75)	22.9 (57)	21.7 (53)	19.8 (47)	18.2 (42)	21.9 (49)	26.4 (58)	24.1 (52)	24.9 (51)	3.17	2.15, 4.66	<.001
OPD	20.8 (15)	9.0 (6)	3.1 (2)	11.1 (7)	8.1 (5)	9.8 (6)	8.3 (5)	5.1 (3)	3.5 (2)	10.3 (6)	3.5 (2)	5.4 (3)	7.4 (4)	0.60	0.49, 0.73	<.001
Agoraphobia																
BPD	12.1 (35)	2.2 (6)	3.0 (8)	4.6 (12)	3.5 (9)	4.0 (10)	5.3 (13)	4.6 (11)	3.0 (7)	5.8 (13)	7.7 (17)	6.0 (13)	6.3 (13)	4.14	1.51, 11.31	.006
OPD	2.8 (2)	1.5 (1)	0.0 (0)	1.6 (1)	0.0 (0)	1.6 (1)	0.0 (0)	1.7 (1)	3.5 (2)	1.7 (1)	3.5 (2)	0.0 (0)	0.0 (0)	1.09	0.70, 1.68	.710
Social phobia																
BPD	49.7 (144)	22.6 (62)	19.0 (51)	17.4 (46)	11.8 (30)	7.2 (18)	13.1 (32)	15.1 (36)	11.3 (26)	11.6 (26)	11.4 (25)	9.7 (21)	10.2 (21)	2.81	1.83, 4.33	<.001
OPD	22.2 (16)	6.0 (4)	6.3 (4)	6.4 (4)	0.0 (0)	1.6 (1)	3.3 (2)	3.4 (2)	1.7 (1)	1.7 (1)	1.7 (1)	1.8 (1)	0.0 (0)	0.31	0.23, 0.41	<.001
Simple phobia																
BPD	35.2 (102)	33.8 (93)	23.4 (63)	17.8 (47)	10.2 (26)	10.0 (25)	15.6 (38)	8.0 (19)	3.0 (7)	9.4 (21)	10.0 (22)	9.3 (20)	15.1 (31)	1.53	1.06, 2.21	.024
OPD	20.8 (15)	22.4 (15)	18.8 (12)	11.7 (7)	8.1 (5)	6.6 (4)	11.7 (7)	8.5 (5)	5.2 (3)	6.9 (4)	10.3 (6)	5.4 (3)	5.6 (3)	0.32	0.24, 0.43	<.001
Obsessive-compulsive disorder																
BPD	14.5 (42)	8.0 (22)	9.3 (25)	6.4 (17)	11.0 (28)	10.8 (27)	9.0 (22)	8.8 (21)	4.3 (10)	4.5 (10)	7.3 (16)	3.7 (8)	4.9 (10)	4.05	1.65, 9.96	.002
OPD	2.8 (2)	4.5 (3)	1.6 (1)	4.8 (3)	1.6 (1)	1.6 (1)	1.7 (1)	1.7 (1)	1.7 (1)	3.5 (2)	1.7 (1)	1.8 (1)	3.7 (2)	0.42	0.27, 0.68	<.001
Generalized anxiety disorder																
BPD	11.0 (32)	8.7 (24)	6.3 (17)	7.2 (19)	10.2 (26)	4.4 (11)	3.7 (9)	4.6 (11)	3.5 (8)	4.9 (11)	9.1 (20)	7.9 (17)	15.6 (32)	3.77	1.87, 7.60	<.001
OPD	2.8 (2)	1.5 (1)	0.0 (0)	3.2 (2)	3.2 (2)	1.6 (1)	0.0 (0)	1.7 (1)	1.7 (1)	3.5 (2)	5.2 (3)	1.8 (1)	3.7 (2)	1.24	0.86, 1.79	.255
Any eating disorder																
BPD	53.8 (156)	41.5 (114)	36.4 (98)	33.7 (89)	23.5 (60)	19.7 (49)	19.7 (48)	18.5 (44)	12.6 (29)	13.4 (30)	16.4 (36)	16.2 (35)	13.7 (28)	1.95	1.28, 2.96	.002
OPD	26.4 (19)	20.9 (14)	15.6 (10)	14.3 (9)	11.3 (7)	13.1 (8)	11.7 (7)	8.5 (5)	6.9 (4)	8.6 (5)	10.3 (6)	10.7 (6)	9.3 (5)	0.27	0.21, 0.36	<.001
Anorexia nervosa																
BPD	21.7 (63)	3.6 (10)	1.1 (3)	2.7 (7)	1.2 (3)	1.6 (4)	1.6 (4)	2.1 (5)	0.9 (2)	0.5 (1)	2.7 (6)	2.3 (5)	2.9 (6)	Model did not converge		
OPD	5.6 (4)	1.5 (1)	1.6 (1)	1.6 (1)	1.6 (1)	1.6 (1)	1.7 (1)	1.7 (1)	1.7 (1)	0.0 (0)	0.0 (0)	1.8 (1)	0.0 (0)			
Bulimia nervosa																
BPD	24.1 (70)	10.9 (30)	10.0 (27)	5.3 (14)	2.8 (7)	1.6 (4)	2.1 (5)	1.3 (3)	0.0 (0)	1.8 (4)	2.3 (5)	3.2 (7)	2.0 (4)	1.79	096, 3.35	.070
OPD	12.5 (9)	7.5 (5)	4.7 (3)	3.2 (2)	1.6 (1)	1.6 (1)	0.0 (0)	1.7 (1)	1.7 (1)	1.7 (1)	1.7 (1)	1.8 (1)	0.0 (0)	0.12	0.06, 0.23	<.001
Eating disorder not otherwise specified																
BPD	28.3 (82)	30.2 (83)	27.5 (74)	27.7 (73)	20.0 (51)	16.5 (41)	16.0 (39)	15.1 (36)	11.7 (27)	11.2 (25)	12.7 (28)	10.7 (23)	9.8 (20)	2.35	1.87, 4.00	.002
OPD	11.1 (8)	13.4 (9)	10.9 (7)	9.5 (6)	8.1 (5)	9.8 (6)	10.0 (6)	6.8 (4)	3.5 (2)	6.9 (4)	8.6 (5)	8.9 (5)	9.3 (5)	0.31	0.22, 0.43	<.001

[a]ΔTime24 is the relative change from baseline to 24 y (the exponentiated sum of the coefficients for Time and Time²).

Abbreviations: BL = baseline, BPD = borderline personality disorder, OPD = other personality disorder, PTSD = posttraumatic stress disorder, RRR = relative risk ratio.

Table 2.

Symptomatic Disorders Experienced by BPD Patients Followed Prospectively for 24 Years Who Did or Did Not Recover

% (N)	BL	2 y	4 y	6 y	8 y	10 y	12 y	14 y	16 y	18 y	20 y	22 y	24 y	RRR recovery status ΔTime24[a] IntΔTime24[b]	95% CI recovery status ΔTime24 IntΔTime24	P value recovery status ΔTime24 IntΔTime24
Any mood disorder																
Recovered	96.8 (150)	78.1 (121)	62.6 (97)	64.5 (100)	62.0 (93)	58.8 (87)	46.3 (68)	46.5 (67)	45.7 (64)	47.5 (65)	50.0 (68)	47.1 (64)	46.5 (60)	0.87	0.81, 0.93	<.001
Not recovered	97.0 (131)	93.3 (112)	89.5 (102)	89.9 (98)	90.5 (95)	89.1 (90)	83.5 (81)	86.2 (81)	83.5 (76)	88.5 (77)	76.2 (64)	70.0 (56)	82.9 (63)	0.83	0.76, 0.91	<.001
														0.61	0.49, 0.76	<.001
Any substance use disorder																
Recovered	58.1 (90)	21.9 (34)	14.8 (23)	12.9 (20)	8.0 (12)	10.8 (16)	8.2 (12)	7.6 (11)	7.1 (10)	7.3 (10)	11.0 (15)	14.0 (19)	14.0 (18)	0.79	0.57, 1.09	.152
Not recovered	66.7 (90)	40.0 (48)	36.0 (41)	27.5 (30)	25.7 (27)	17.8 (18)	19.6 (19)	17.0 (16)	15.4 (14)	17.2 (15)	10.7 (9)	17.5 (14)	15.8 (12)	0.50	0.35, 0.71	<.001
														0.57	0.25, 1.29	.174
PTSD																
Recovered	49.7 (77)	40.7 (63)	28.4 (44)	20.7 (32)	11.3 (17)	8.8 (13)	7.5 (11)	6.9 (10)	6.4 (9)	6.6 (9)	8.1 (11)	11.0 (15)	11.6 (15)	0.59	0.48, 0.74	<.001
Not recovered	68.2 (92)	65.0 (78)	61.4 (70)	55.1 (60)	45.7 (48)	38.6 (39)	37.1 (36)	36.2 (34)	25.3 (23)	36.8 (32)	31.0 (26)	33.8 (27)	35.5 (27)	0.41	0.32, 0.52	<.001
														0.26	0.14, 0.50	<.001
Any anxiety disorder																
Recovered	76.8 (119)	53.6 (83)	42.6 (66)	34.8 (54)	30.0 (45)	24.3 (36)	27.2 (40)	20.8 (30)	17.9 (25)	24.1 (33)	31.6 (43)	25.0 (34)	34.9 (45)	0.67	0.58, 0.77	<.001
Not recovered	84.4 (114)	76.7 (92)	77.2 (88)	73.4 (80)	68.6 (72)	57.4 (58)	59.8 (58)	56.4 (53)	52.8 (48)	60.9 (53)	59.5 (50)	65.0 (52)	67.1 (51)	0.72	0.62, 0.84	<.001
														0.64	0.46, 0.88	.007
Any eating disorder																
Recovered	52.3 (81)	34.8 (54)	27.1 (42)	23.3 (36)	18.0 (27)	16.2 (24)	12.2 (18)	9.7 (14)	7.1 (10)	6.6 (9)	13.2 (18)	10.3 (14)	9.3 (12)	0.74	0.57, 0.97	.030
Not recovered	55.6 (75)	50.0 (60)	49.1 (56)	48.6 (53)	31.4 (33)	24.8 (25)	30.9 (30)	31.9 (30)	20.9 (19)	24.1 (21)	21.4 (18)	26.3 (21)	21.1 (16)	0.32	0.23, 0.43	<.001
														0.74	0.39, 1.41	.362

The column headings "Follow-up period" spans columns 2 y through 24 y.

[a]ΔTime24 is the relative change from baseline to 24 y (the exponentiated sum of the coefficients for Time and Time²).
[b]IntΔTime24 is the comparison of the relative change for the recovered vs nonrecovered groups (the exponentiated sum of the coefficients for the interaction of Recovery Status with Time and Time²).
Abbreviations: BL = baseline, BPD = borderline personality disorder, OPD = other personality disorder, PTSD = posttraumatic stress disorder, RRR = relative risk ratio.

Table 3.

Relative Risk Ratios of Recovery for Absence of Symptomatic Disorders Experienced by 275 Patients With BPD

Absent disorder	Relative risk ratio	SE	95% CI	z	P
Mood disorder	1.42	0.08	1.28, 1.57	6.63	<.001
Substance use disorder	2.53	0.37	1.90, 3.37	6.38	<.001
PTSD	2.00	0.19	1.66, 2.40	7.40	<.001
Anxiety disorders	1.37	0.08	1.23, 1.53	5.66	<.001
Eating disorders	1.61	0.17	1.30, 1.99	4.39	<.001

Abbreviations: BPD = borderline personality disorder, PTSD = posttraumatic stress disorder.

nonrecovered borderline patients had a decrease of 50%, while recovered borderline patients had a decrease of 72%. For PTSD, nonrecovered borderline patients had a decrease of 59%, while recovered borderline patients had a decrease of 89%. For anxiety disorders, nonrecovered borderline patients had a decrease of 28%, while recovered borderline patients had a decrease of 54%. For eating disorders, nonrecovered borderline patients had a decrease of 68%, while recovered borderline patients had a decrease of 76%. Although there were decreases over 24 years for all 5 categories of disorders for both groups, we note that the rates of decrease for the recovered group were significantly steeper when compared to the nonrecovered group for 3 of the categories: any mood disorder, anxiety disorder, and PTSD. In contrast, the differences between the 2 groups in their rates of decrease for any substance use and eating disorder were not statistically discernible. Finally, we note that at baseline, the recovered borderline patients had significantly lower rates of mood, PTSD, and anxiety disorders when compared to nonrecovered borderline patients.

Next, we considered the joint relationship of the 5 types of disorders with recovery from BPD. Table 3 details the relative risk ratio for the absence over time of each of the 5 types of disorders, which were analyzed together, in relationship to recovery from BPD. As can be seen, the absence of each of these disorders significantly improved a patient's chances of recovery from BPD. The absence of substance use disorders improved chances of recovery by a factor of almost 3 (2.53), absence of PTSD by a factor of 2.0, absence of an eating disorder by a factor of 1.61, absence of mood disorders by a factor of 1.42, and absence of anxiety disorders by a factor of 1.3.

DISCUSSION

This study has 4 main findings. First, patients with BPD reported significantly higher rates of all 5 types of disorders studied over time than personality-disordered comparison subjects. This is not surprising as BPD is typically considered a more severe disorder than most other personality disorders. This set of results is also consistent with our findings at 6-year follow-up for these conditions.[36] However, the prevalence rates found after a quarter of a century of prospective follow-up were still high for mood disorders (60%) and anxiety disorders (47%), and intermediate for PTSD (21%), but substantially lower for substance use disorders (15%) and eating disorders (14%). These rates are very different than those reported at 24-year follow-up for comparison subjects: mood disorders (32%), anxiety disorders (19%), PTSD (4%), substance use disorders (4%), and eating disorders (9%).

Given these findings, it is particularly concerning that the prevalence of these mood and anxiety disorders continued to be so high a quarter of a century after their initial assessment despite the fact that a substantial percentage of these patients with BPD continued to participate in both psychotherapy and pharmacotherapy, often intermittently over the course of the study.[46,47] Thus, these symptomatic disorders have persisted or recurred despite a high likelihood that they were the object of active treatment efforts, mostly in the community and almost entirely treatment as usual rather than an evidence-based treatment for BPD.

As a note of caution, it is possible that despite the rigor of our diagnostic procedures, some patients might have been diagnosed with a mood or anxiety disorder when they were actually despondent or frightened in a chronic manner that is related to their personality rather than having a symptom of a full-blown symptomatic disorder. This diagnostic dilemma might become even more complex if the Alternative Model for Personality Disorders[48] becomes, as many observers expect, the next official diagnostic criteria set for BPD as anxiousness and depressivity are 2 of the 10 proposed criteria.

Second, both groups considered together reported significant declines in all 5 types of disorders studied. It is notable that emotional disorders (mood and anxiety) had the lowest rates of decline (40% and 43%). In contrast, the impulsive disorders (substance use and eating disorders) declined substantially more (70% and 73%). This is consistent with results found for the emotional and impulsive symptoms of BPD as assessed by the DIB-R.[49] However, PTSD, which has been found to be a remitting relapsing disorder,[50] had an intermediate rate of decline (68%) but one closer to impulsive than emotional disorders. This outcome may be due, in part, to the inclusion in *DSM-III-R* of angry outbursts as one of the criteria for PTSD.

Third, recovered borderline patients had greater declines than nonrecovered borderline patients in prevalence over time for all categories of disorder other than substance use disorders and eating disorders, the rates of which were about the same for both the recovered and nonrecovered study groups. In fact, the comparisons

of reported rates at the 12th follow-up period were striking. More specifically, 47% of recovered borderline patients reported a mood disorder, while 83% of nonrecovered subjects reported a mood disorder. In a similar fashion, the following rates were found for substance use disorders (14% vs 16%), anxiety disorders (35% vs 67%), PTSD (12% vs 36%), and eating disorders (9% vs 21%).

This result is not surprising as nonrecovered borderline patients by definition are more impaired than recovered borderline patients. It may be that their greater comorbidity over time seriously interfered with the concurrent attainment of symptomatic remission and both the close relationships and competent and consistent full-time vocational engagement that define recovery from BPD. It may be that borderline patients who recover are more responsive to treatment than those who do not. It may also be that there is something fundamentally different about the temperament, neurobiology, or life experiences of these 2 groups of borderline patients.

Fourth, the absence of co-occurring disorders over time had a disparate impact on the outcome of recovery. The absence of a substance use disorder had the greatest positive impact on achieving recovery (ie, by a factor of 2.53), while the absence of an anxiety disorder had the lowest impact (1.37) on the attainment of recovery.

These findings mirror our 6-year findings on the absence of symptomatic disorders on time to remission of BPD.[36] There too the absence of a substance use disorder increased the likelihood of attaining a positive outcome—a remission of BPD—more than the absence of any other type of disorder. This finding contrasts with clinical wisdom which suggests that the most deleterious comorbidities for borderline patients are major depression and PTSD. This is so for a number of reasons. The first is that clinicians tend to associate a mood disorder with suicidality, which in turn is associated with costly psychiatric hospitalization. The second is that most clinicians are very sensitive to the importance of a history of childhood sexual abuse and/or adult sexual assault. In contrast, many clinicians downplay the role of substance abuse in a borderline patient's symptomatic and psychosocial outcome. For example, a clinician might associate a patient's excessive drinking with their trauma history—"she only drinks to forget what happened to her." This might be true to a certain degree, but if a patient meets full criteria for a substance use disorder, they may well benefit from treatment for their problematic drinking and/or drug abuse. This is particularly important as a substance use disorder can exacerbate the severity of all 4 sectors of borderline psychopathology. This includes the quieter affective and cognitive symptoms of BPD (eg, more frequent feelings of emptiness or loneliness and more intense distrust of others). It also includes the more dramatic impulsive and interpersonal symptoms of BPD (eg, engaging in multiple

forms of impulsivity that are self-defeating and more chaotic close relationships). It can also have a profoundly negative impact on all types of relationships, including with coworkers and employers, as well as on full-time vocational functioning that is competent and consistent.

In the end, the possible underdiagnosis of substance use disorder in patients with BPD is even more unfortunate given that there are now treatments that have some evidence base for their effectiveness in treating those with BPD. Some of these treatments are psychosocial in nature,[51] and best known among them are Linehan's studies of dialectical behavior therapy in the treatment of women with BPD and a co-occurring substance use disorder.[52,53] In addition, medication treatment of substance use disorders has advanced steadily in recent years and would be another avenue open to psychiatrists treating these patients.[54,55]

Limitations

This study has 2 main limitations. One limitation of this study is that all the patients were seriously ill inpatients at the start of the study. Another limitation is that the majority of the borderline patients were at least intermittently in individual therapy and taking psychotropic medications over the years of follow-up.[46,47] Thus, it is difficult to know if these results would generalize to a less disturbed group of patients or people meeting criteria for BPD who were not in treatment as usual in the community.

CONCLUSIONS

The results of this study suggest that symptomatic disorders co-occur less commonly with BPD over time, particularly for recovered borderline patients. They also suggest that substance use disorders are the disorders that are most closely associated with the failure to achieve recovery from BPD.

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