Trauma exposure and posttraumatic stress disorder among primary care patients with bipolar spectrum disorder

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Abstract

Objective—To examine relationships between exposure to trauma, bipolar spectrum disorder (BD) and posttraumatic stress disorder (PTSD) in a sample of primary care patients.

Methods—A systematic sample (n = 977) of adult primary care patients from an urban general medicine practice were interviewed with measures including the Mood Disorders Questionnaire, the PTSD Checklist–Civilian Version, and the Medical Outcomes Study 12-Item Short Form Health Survey.

Results—Compared with patients who screened negative for BD (n = 881), those who screened positive (n = 96) were 2.6 times [95% confidence interval (CI): 1.6–4.2] as likely to report physical or sexual assault, and 2.9 times (95% CI: 1.6–5.1) as likely to screen positive for current PTSD. Among those screening positive for BD, comorbid PTSD was associated with significantly worse social functioning. These results controlled for selected background characteristics, current major depressive episode, and current alcohol/drug use disorder.

Conclusion—In an urban general medicine setting, trauma exposure was related to BD, and the frequency of PTSD among patients with BD appears to be common and clinically significant. These results suggest an unmet need for mental health care in this specific population and are especially important in view of available treatments for BD and PTSD.

Keywords

bipolar disorder; posttraumatic stress disorder; primary care; trauma exposure

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Bipolar disorder (BD) is among the 10 most disabling medical conditions in the world (1), and has been associated with increased risk of morbidity, mortality (2) and psychiatric comorbidity (3) including post-traumatic stress disorder (PTSD) (4–8). The rate of PTSD among persons with BD has been estimated to range from 11% in patients with first-admission psychosis (7) to approximately 40% in the subgroup of respondents with BD in a nationwide community sample (8) and among ambulatory and hospitalized bipolar patients (4).

Emerging evidence suggests that history of trauma may be related to both etiology and illness course of BD (5, 6). For example, early parental loss has been found to increase the risk for BD (9), and high-impact trauma, such as sexual and physical abuse, has been associated with poor illness course of BD (7, 8).

Bipolar illness might be both a consequence of traumatic events (e.g., disasters, physical or sexual assaults) and a generator of additional traumatic events such as interpersonal adversities (e.g., violent events) (5, 10). The study of these trajectories can complement research on the role of family psychiatric history and genetics (11–13). It has been suggested, but not yet systematically studied, that exposure to interpersonal trauma following BD onset may result from the poor judgment and risky behaviors (e.g., substance use, reckless driving, and irritability) that partially define hypomanic and manic episodes (5).

This report is based on data from a cross-sectional study of a systematic sample of 997 low-income primary care patients attending a large primary care clinic in New York City (14–16). We aimed to examine whether patients with a history of BD are at increased risk (i) to experience psychological trauma in general, physical and sexual assault in particular; and (ii) to develop PTSD following exposure to trauma. We also explored whether exposure to trauma increases the risk of BD independent from PTSD and whether comorbidity of PTSD increases the risk for impairment and functioning problems among patients with BD.

We hypothesized that: (i) a history of exposure to trauma and especially assaultive trauma would be more common in patients with BD than in those without BD; (ii) the prevalence of current PTSD would be higher in patients with BD than in those without BD; (iii) exposure to trauma would increase the risk of BD independent of PTSD; and (iv) patients with BD who have comorbid PTSD would manifest greater functional impairment then those with BD but without PTSD.

Materials and methods

The study was conducted at the Associates in Internal Medicine (AIM) practice of Columbia University Medical Center, New York, NY, USA, between December 2001 and January 2003. The full details of the survey methods can be found in a previous report (14). AIM is the faculty and resident group practice of the Division of General Medicine. AIM serves approximately 18,000 adult patients from the surrounding community each year.

All survey forms were translated from English to Spanish and back-translated by a bilingual team of mental health professionals. The Spanish forms were reviewed and approved by the Hispanic Research and Recruitment Center at Columbia Presbyterian Medical Center. The institutional review boards of the Columbia University Medical Center and the New York State Psychiatric Institute approved the study protocol. All participants provided written informed consent.

Patient recruitment

A systematic sample of consecutive adult patients seeking primary care at AIM was invited to participate. Patients were systematically approached to determine their eligibility on the basis of the position of the seat they freely selected in the AIM waiting room. Every consecutive patient from the back of the room to the front was screened for eligibility to obtain our final goal of approximately 1,000 patients. Eligible patients were between 18 and 70 years of age, had made at least one prior visit, could speak and understand English or Spanish, and were waiting for a scheduled face-to-face contact with their primary care physician. Patients were excluded if their current general health status prohibited completion of the survey forms. Patients were offered all study forms in their preferred language (English or Spanish) and the research assistants read the forms aloud if the patient requested it. All research assistants were bilingual and bicultural, which helped to minimize communication gaps.

Of the 1,118 patients who met eligibility criteria, 992 (88.7%) consented to participate, of whom 982 (99.0%) completed the survey. Of these, the 977 (99.5%) who provided data on both PTSD and BD status comprise the analytic sample for the present report.

Socio-demographic and clinical assessment

All participants completed a socio-demographic history form to assess age, gender, race/ethnicity, marital status, annual household income, occupational status and educational achievement. Participants also completed the Mood Disorders Questionnaire (MDQ), a 15-item self-report assessment of lifetime bipolar spectrum disorder based on DSM-IV criteria (17). Standard MDQ scoring requires endorsement of at least seven lifetime manic symptoms, the co-occurrence of several symptoms, and moderate or serious associated functional impairment. Using these criteria, the MDQ performed adequately in two unrelated outpatient psychiatric samples, using Structured Clinical Interview for DSM-IV bipolar spectrum disorder as the gold standard: sensitivity/specificity in these studies were 0.73/0.90 (17) and 0.58/0.67 (18). In the current analysis, participants who met or exceeded the standard MDQ scoring algorithm were considered to have screened positive for a lifetime history of BD.

We used the Primary Care Evaluation of Mental Disorders Patient Health Questionnaire (19) to screen for current major depressive episode (MDE) and current alcohol or drug use disorder (ADUD), two disorders that if uncontrolled in the analyses might confound our findings. Physical and mental health functioning were based, respectively, on the Physical and Mental Component Summary scores of the Medical Outcomes Study 12-Item Short Form Health Survey (SF-12) (20). Impairment was evaluated with the 10-point self-rated social life and family life/home responsibilities subscales of the Sheehan Disability Scale (0 = none, 1–3 = mild, 4–6 = moderate, 7–9 = marked, 10 = extreme) (21). Significant impairment for each subscale was defined by a rating of 7 or higher. Because only 229 (20.0%) of the patients were gainfully employed, the work subscale of the Sheehan Disability Scale was not used in the following analyses. Self-report information was collected regarding mental health treatment history, including psychotropic medication and mental health diagnoses previously received by a health professional.

Exposure to trauma was determined based on a positive report of at least one trauma exposure from the Life Events Scale (22) ('happened to me' or 'witnessed it'). We modified the scale by adding two recent events: the World Trade Center (September 11, 2001) attack and the plane crash of Flight 587 to the Dominican Republic, the latter being potentially relevant to the large segment of the clinic population who were born or had family in the Dominican Republic.

The prevalence of PTSD was determined by scoring responses to the PTSD Checklist–Civilian Version (PCL-C) (23) using DSM-IV-based criteria. The PCL-C consists of 17 items corresponding to each symptom in DSM-IV PTSD criteria B, C, and D. Symptoms are rated from 1 (not at all) to 5 (extremely) reflecting the extent to which each symptom bothered the patient in the last month. To screen positive for PTSD, the respondent must rate at least one B symptom, three C symptoms, and two D symptoms with a score of at least 3 (moderately). This instrument has been widely used as a PTSD screen and has been shown to have good internal consistency, high correlations with other measures of PTSD and high diagnostic efficiency (23–25).

Data analysis

Descriptive methods were used to examine back-ground characteristics of the entire sample. A lifetime prevalence of positive screen for bipolar disorder was determined to estimate the prevalence of bipolar disorder by scoring positive responses to MDQ items, and the 95% confidence interval (CI) was determined. Subjects with PCL-C DSM-IV positive screen were classified as having current PTSD.

The prevalence of a positive screen for BD was stratified by age (18–44, 45–54, 55–64, and 65–70 years), gender, and race/ethnicity. For race/ethnicity, patients were categorized as Hispanic if they identified their national origin as Spain or Latin America or if they chose to complete the study forms in Spanish. Non-Hispanic patients were categorized as either black or white/other. Similar analyses were also performed stratified by marital status, level of education, and family income.

We then examined the proportion of patients with and without bipolar disorder who reported exposure to any traumatic event, any assaultive event, and any non-assaultive event, and the proportion who met criteria for current PTSD. To test whether exposure to trauma or the presence of PTSD is associated with bipolar disorder, we conducted a series of logistic regressions with bipolar disorder as the outcome (1 = present, 0 = absent) and each of the following dichotomous variables as the sole predictor: exposure to any traumatic event, exposure to any assaultive event, exposure to any non-assaultive event, and current PTSD related to any of the traumatic events. We then adjusted these analyses for a set of potential confounders which we defined as the background variables (Table 1) meeting *both* these criteria: (i) related to any of the trauma exposure variables or to PTSD (i.e., the predictors) at $p < 0.15$; and (ii) related to the bipolar disorder outcome at $p < 0.15$. Using these criteria, we selected age group, income (five levels), MDE, and ADUD as covariates. When the main predictor was trauma, we further controlled for the presence of PTSD, in order to isolate any trauma/BD association.

To explore which bipolar spectrum symptoms are associated with trauma exposure, we conducted a series of logistic regressions with each of the MDQ symptoms (1 = present, 0 = absent) as the outcome, and lifetime exposure to any trauma (1 = present, 0 = absent) as the predictor. We then adjusted these analyses for a set of potential confounders which we defined as back-ground variables (Table 1) meeting *both* these criteria: (i) related to the trauma exposure variable (main predictor) at $p < 0.15$; and (ii) related to any of the MDQ symptom outcomes at $p < 0.15$. Using these criteria, we selected income (five levels), MDE, ADUD, and PTSD as covariates.

To test whether PTSD increases the risk for functioning problems among patients with BD, we restricted the analysis to patients who screened positive for BD and conducted: (i) separate logistic regressions with various binary outcomes and current PTSD as the main predictor (1 = present, 0 = absent); and (ii) two linear regressions with the SF-12 Mental and Physical Component Summary scores as the outcome and current PTSD as the main

predictor. We then adjusted these analyses for a set of potential confounders which we defined as background variables (Table 1) meeting *both* these criteria among patients screening positive for BD: (i) related to current PTSD (i.e., the main predictor) at $p < 0.15$; and (ii) related to any of the outcomes at $p < 0.15$. Using these criteria, we adjusted for gender and Hispanic ethnicity (yes/no). We adjusted for Hispanic ethnicity instead of race/ethnicity (three levels) because the latter caused estimation problems due to the small number of whites/others. Immigrant status also met the criteria for entry; however, we did not adjust for it because of its high correlation with Hispanic ethnicity among those screening positive for BD ($\Phi = 0.78$, $p < 0.0001$).

Results

Socio-demographic correlates

The prevalence of screening positive for bipolar disorder did not vary significantly by gender, age, race/ethnicity, marital status, or level of educational achievement, but was significantly related to level of annual household income, with the highest rates among the poorest respondents (Table 1).

The associations between BD, trauma exposure, and PTSD

While BD was not significantly associated with trauma exposure in general, it was significantly related to reports on assaultive trauma. As compared to patients who screened negative for BD (n = 881), those who screened positive (n = 96) were 2.6 times (95% CI: 1.6–4.2) as likely to report physical or sexual assault, controlling for potential demographic and diagnostic confounders. Conversely, patients who screened positive (versus negative) for BD were about equally likely [odds ratio (OR) = 1.0; 95% CI: 0.5–1.8] to report non-assaultive trauma. This result was likewise nonsignificant when we excluded the World Trade Center (September 11, 2001) attack from the definition of lifetime trauma exposure (data not shown).

Posttraumatic stress disorder was more than three times as common among patients screening positive (versus negative) for BD (31.6% versus 9.4%, respectively; Table 2). After adjusting for potential confounders, PTSD remained significantly associated with BD.

Exposure to trauma was significantly associated with eight of the 13 bipolar spectrum symptoms on the MDQ: being 'hyper', being 'irritable', having 'racing thoughts', 'spending money', 'excessive, foolish or risky behaviors', being 'more active, social or outgoing', being 'easily distracted', and being 'more talkative' than usual (Table 3). All of these symptoms except 'more talkative' remained significantly associated with exposure to trauma when controlling for current PTSD, current MDE, and current ADUD.

Comorbid BD and PTSD: impairment, functioning and health

Among patients screening positive for BD, significant social and family life impairment were more common among those who screened positive (versus negative) for PTSD (Table 4). Impairment in social functioning remained strongly associated with PTSD after adjusting for covariates.

Work loss of one week or more in the past month was also more commonly reported by patients with BD with (versus without) comorbid PTSD, and was significantly associated with PTSD after controlling for covariates (Table 4).

Finally, mental and physical health-related quality of life was worse for patients with BD with (versus without) PTSD (Table 4). The group difference in SF-12 Mental Component Summary scores remained statistically significant after controlling for covariates.

Discussion

In a systematic sample of low-income, mostly immigrant primary care patients, we found that: (i) lifetime BD was significantly associated with history of assaultive trauma; (ii) patients with lifetime BD were four times as likely to screen positive for current PTSD than patients without BD; and (iii) comorbidity of lifetime bipolar disorder and current PTSD was significantly associated with impairment and poor social functioning.

Due to the cross-sectional design of this investigation, the nature of the trauma/BD association is yet to be fully explored. Our data do not permit temporal sequencing of the relationships between trauma and BD, as the onset of BD might either follow the exposure to trauma or have occurred either before or during exposure to trauma. Longitudinal studies that ascertain prospectively information on time of exposure to trauma and onset of BD symptoms will enable such investigation.

We found high rates of positive screen for PTSD (31.6%) among patients who screened positive for BD when compared with those who screened negative for BD (9.4%). These rates are considerably higher than were reported in a first-admission cohort of patients with psychosis (11%) (7), but somewhat lower than those found among people with lifetime BD in the general population (39%) (8). These differences may be partially explained by differences in how BD was defined or ascertained in each study. Our findings are consistent with the notion that BD might share an associated biological or genetic risk with anxiety symptoms (5, 6). Recent genetic and family studies have found evidence supporting the association between BD and panic disorder (26, 27), which is frequently comorbid with PTSD (28, 29).

Although some aspects of the association between exposure to trauma and BD (e.g., illness course) have been previously documented (9, 10, 30), to the best of our knowledge this is the first study to examine whether BD is related to trauma history while controlling for the presence of PTSD. Our findings suggest that BD is common among patients with trauma history and that this association cannot be fully explained by comorbidity between BD and PTSD.

It has been suggested, but is yet to be demonstrated, that exposure to trauma following the onset of BD may result from poor judgment and risky behaviors that often characterize hypomanic and manic episodes (5). Our data partially support this hypothesis. We found more BD symptoms such as being 'hyper', having 'racing thoughts', 'irritability', being 'easily distracted', and engaging in 'excessive, foolish, risky behaviors' among patients exposed to trauma compared with patients who have not been exposed to trauma. Because such symptoms are likely to impair concentration as well as control and regulation of affect, they may contribute to interpersonal disputes, adversities, and injuries. Our finding that bipolar disorder is significantly related to assaultive trauma, and not to non-assaultive trauma, supports this hypothesis.

Many patients with persistent PTSD are unable to function in work and social activities and remain impaired despite maintenance treatment (16). Our study demonstrates that patients with bipolar disorder who screened positive for current PTSD similarly experienced significant disability in health and social functioning compared to patients with bipolar disorder uncomplicated by comorbid PTSD. This observation suggests that patients with comorbid BD and PTSD symptoms are an especially vulnerable clinical population (6).

Taken together, these findings highlight overlooked clinical needs for patients with BD and PTSD. Because poor and ethnic minority populations tend to avoid seeking (31) or receiving treatment from mental health specialists (32, 33), and disproportionately rely on primary care services for the provision of their mental health care (34), our findings underscore the importance of developing post-trauma care for individuals seeking care in general medical practices. A history of manic symptoms among patients with trauma-related disorders such as PTSD may indicate the existence of a bipolar spectrum disorder and the need to consider pharmacological treatments aimed at mood stabilization rather than only selective serotonin reuptake inhibitors, the standard pharmacological treatment for patients with uncomplicated PTSD (35).

The study has several limitations. First, as previously noted, the cross-sectional design forecloses the opportunity to examine temporal relationships between trauma, BD and PTSD. Second, we used self-report instruments to screen for BD and PTSD rather than semi-structured research interviews that might have yielded more valid diagnostic classification. Third, because our survey assessed lifetime BD and current PTSD, it potentially missed patients with current BD or lifetime PTSD. Fourth, our data lack systematic information on age of exposure to trauma and age of onset of BD and PTSD. Fifth, because the study was undertaken in an urban general medical practice serving a low-income population, the results may not be generalizable to other primary care settings (36, 37).

A combination of BD and PTSD is common in this primary care practice. Our findings demonstrate that this combination of mental disorders is associated with clinically significant symptoms and functional impairment. Moreover, the relation of BD to trauma is substantial and characterized primarily by interpersonal trauma such as physical and sexual assault (10). In order to recognize trauma history in primary care, physicians and mental health professionals need to obtain a detailed trauma history (38, 39). Timely provision of clinical interventions to patients with BD who have been exposed to trauma and manifest with PTSD symptoms may help to prevent long-term, persistent morbidity.

Acknowledgments

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Table 1

Rates of positive screen for lifetime bipolar disorder stratified by background characteristics

Characteristic	Bipolar disorder (lifetime)		Test	p-value
	Yes, % (n)	No, % (n)		
All participants	100.0 (96)	100.0 (881)		
Age range, years			$\chi^2(3) = 7.3$	0.06
18–44	25.0 (24)	27.5 (242)		
45–54	41.7 (40)	29.1 (256)		
55–64	24.0 (23)	28.3 (249)		
65–70	9.4 (9)	15.2 (134)		
Gender			$\chi^2(1) = 0.6$	0.44
Female	66.7 (64)	70.5 (621)		
Male	33.3 (32)	29.5 (260)		
Race/ethnicity			$\chi^2(2) = 0.6$	0.76
Hispanic	80.2 (77)	82.1 (723)		
Black, non-Hispanic	15.6 (15)	13.1 (115)		
White/other, non-Hispanic	4.2 (4)	4.9 (43)		
Marital status			$\chi^2(3) = 0.5$	0.92
Married or cohabiting	32.3 (31)	31.4 (276)		
Separated or divorced	45.8 (44)	43.4 (381)		
Widowed	6.3 (6)	7.2 (63)		
Never married	15.6 (15)	18.0 (158)		
Immigration status			$\chi^2(1) = 0.8$	0.37
Born in the USA	22.9 (22)	19.1 (168)		
Not born in the USA	77.1 (74)	80.9 (713)		
Level of education			$\chi^2(1)^a = 1.7$	0.19
Up to eighth grade	41.1 (39)	37.1 (324)		
Ninth to 11th grade	19.0 (18)	16.6 (145)		
High school graduate	21.1 (20)	24.2 (211)		
Some college or technical school	15.8 (15)	13.9 (121)		
Four years or more of college	3.2 (3)	8.3 (72)		
Annual household income			$\chi^2(1)^a = 8.0$	0.005
<$6,000	55.3 (52)	38.1 (333)		
$6,000–$11,999	27.7 (26)	36.7 (321)		
$12,000–$17,999	10.6 (10)	14.2 (124)		
$18,000–$35,999	5.3 (5)	7.9 (69)		
$36,000 or more	1.1 (1)	3.2 (28)		

[a] Mantel–Haenszel chi-square test of linear trend.

Table 2

Lifetime exposure to traumatic events and positive screening for current posttraumatic stress disorder (PTSD), by bipolar disorder status

Trauma/PTSD status	Positive screen for bipolar disorder		Odds ratio (95% confidence interval)	
	Yes (n = 96), % (n)	No (n = 881), % (n)	Crude	Adjusted
Lifetime exposure to trauma[a]				
Any event	86.5 (83)	79.7 (691)	1.63 (0.89–2.99)	1.08 (0.55–2.10)[b]
Assaultive event	53.1 (51)	23.4 (205)	3.71 (2.41–5.70)[e]	2.57 (1.57–4.19)[b,d]
Non-assaultive event	84.4 (81)	79.0 (683)	1.44 (0.81–2.56)	0.96 (0.51–1.82)[b]
Positive screen for current PTSD	31.6 (30)	9.4 (79)	4.44 (2.72–7.25)[e]	2.87 (1.63–5.06)[b,d]

[a]Lifetime exposure was positive if the event 'happened to me' or 'witnessed it'.

[b]Adjusted for age group, income level, positive screen for current major depressive episode (MDE) (yes/no), positive screen for current alcohol or drug use disorder (yes/no), and positive screen for current PTSD (yes/no).

[c]Adjusted for age group, income level, screen for current MDE (yes/no), and positive screen for current alcohol or drug use disorder (yes/no).

[d]$p < 0.001$.

[e]$p < 0.0001$.

Table 3

Rates of bipolar spectrum symptoms by lifetime exposure to any trauma[a]

Outcome	Exposure to any trauma (lifetime)[a]		Odds ratio (95% confidence interval)	
	Yes (n = 687), % (n)	No (n = 275), % (n)	Crude	Adjusted[b]
Bipolar spectrum symptoms				
Hyperactivity	46.9 (320)	26.9 (74)	2.39 (1.76–3.25)[f]	1.75 (1.24–2.47)[d]
Irritability	42.7 (293)	26.9 (74)	2.02 (1.49–2.74)[f]	1.55 (1.10–2.19)[c]
More self-confident	43.4 (298)	43.3 (119)	1.00 (0.78–1.33)	0.89 (0.65–1.21)
Less sleep	23.8 (163)	21.1 (58)	1.17 (0.83–1.64)	1.12 (0.78–1.63)
More talkative	36.3 (248)	29.6 (81)	1.36 (1.00–1.83)[c]	1.02 (0.73–1.43)
Racing thoughts	48.3 (331)	30.3 (83)	2.15 (1.60–2.90)[f]	1.77 (1.26–2.49)[d]
Easily distracted	47.5 (325)	34.3 (94)	1.73 (1.29–2.31)[e]	1.43 (1.03–1.98)[c]
More energy	29.1 (200)	27.4 (75)	1.09 (0.80–1.49)	1.07 (0.76–1.51)
Much more active	33.6 (230)	28.1 (77)	1.30 (0.95–1.76)	1.32 (0.94–1.85)
Much more social or outgoing	23.4 (160)	15.3 (42)	1.68 (1.16–2.45)[d]	1.61 (1.07–2.43)[c]
Much more interested in sex	21.8 (149)	19.6 (54)	1.14 (0.80–1.61)	1.20 (0.82–1.75)
Excessive, foolish, or risky behaviors	21.7 (149)	12.7 (35)	1.90 (1.28–2.83)[d]	1.78 (1.15–2.77)[c]
Spending money	25.3 (173)	14.2 (39)	2.04 (1.40–2.99)[e]	1.74 (1.15–2.62)[d]

[a]
In this table, the World Trade Center (Twin Towers) attack of September 11, 2001 was excluded from the definition of trauma to prevent including in the analysis respondents whose only trauma exposure was the World Trade Center attack.

[b]
Adjusted for income level, positive screen for current major depressive episode (yes/no), positive screen for current alcohol or drug use disorder (yes/no), and positive screen for current posttraumatic stress disorder (yes/no).

[c]
$p < 0.05$.

[d]
$p < 0.01$.

[e]
$p < 0.001$.

[f]
$p < 0.0001$.

Table 4

Impairment, work loss, and health status among patients screening positive for bipolar disorder (BD), with and without current posttraumatic stress

Outcome	Patients screening positive for BD		Tests	
	Current PTSD (n = 30)	No current PTSD (n = 65)	Crude OR (95% CI)	Adjusted[a] OR (95% CI)
Impairment, % (n)				
Social impairment	68.0 (17)	23.3 (14)	6.98 (2.49–19.59)[e]	5.99 (1.74–20.67)[d]
Family life impairment	46.4 (13)	23.4 (15)	2.83 (1.10–7.26)[c]	1.63 (0.56–4.75)
Work loss, % (n)				
At least seven days lost in past month	70.0 (21)	24.6 (16)	7.15 (2.73–18.73)[f]	4.44 (1.57–12.55)[d]
			Crude difference	Adjusted[a] difference
Health/functioning, mean ± SD				
SF-12 MCS[b]	30.5 ± 8.4	41.9 ± 11.1	−11.46 (−15.98, −6.93)[f]	−6.96 (−11.08, −2.84)[d]
SF-12 PCS[b]	32.8 ± 9.7	37.7 ± 10.8	−4.93 (−9.54, −0.33)[c]	−3.62 (−8.61, +1.37)

[a] Adjusted for gender, Hispanic ethnicity (yes/no), current major depressive episode (yes/no), and current alcohol or drug use disorder (yes/no).

[b] Lower scores denote worse functioning.

[c] $p < 0.05$.

[d] $p < 0.01$.

[e] $p < 0.001$.

[f] $p < 0.0001$.

OR = odds ratio; CI = confidence interval; SF-12 = Medical Outcomes Study 12-Item Short Form Health Survey; MCS = Mental Component Summary; PCS = Physical Component Summary.