Impact of Bipolar Disorder on a U.S. Community Sample

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Background: Bipolar disorder is a chronic psychiatric illness characterized by depression and at least 1 manic or hypomanic episode during the lifetime of the illness. Bipolar symptoms have been associated with significant functional impairment. We conducted a study to determine the psychosocial impact of bipolar disorder in a U.S. community sample.

Method: 3059 subjects were selected from a large epidemiologic study of bipolar prevalence that used the Mood Disorder Questionnaire (MDQ) to screen for bipolar I and II disorder. Subjects were surveyed from April 24, 2001, to August 6, 2001, using the Sheehan Disability Scale and the Social Adjustment Scale-Self Report. Comorbid disease data were also collected.

Results: Of the 3059 subjects surveyed, 2450 (80%) returned completed surveys: 1167 (48%) subjects screened positive for bipolar disorder based on MDQ scores; 1283 (52%) screened negative. MDQ-positive subjects reported significantly ($p < .0001$) more difficulties with work-related performance, social/leisure activities, and social/family interactions compared with MDQ-negative subjects. Younger subjects, aged 18 to 34 years, reported significantly ($p = .003$) more symptom days than did older MDQ-positive subjects. MDQ-positive women reported more disruption in social and family life, while MDQ-positive men reported being jailed, arrested, and convicted for crimes. Anxiety (30% vs. 6%), panic attacks (18% vs. 4%), migraine (24% vs. 11%), asthma (17% vs. 10%), and allergies (42% vs. 29%) were significantly ($p < .05$) more common in MDQ-positive versus MDQ-negative subjects.

Conclusion: Bipolar disorder, as identified in a community sample using the Mood Disorder Questionnaire, was significantly associated with negative impact on the performance of work-related, leisure, and interpersonal activities.

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Bipolar disorder is a chronic psychiatric illness characterized by depression and at least 1 manic or hypomanic episode during the lifetime course of the illness. The dual depressive and manic features of bipolar disorder are difficult to characterize clinically; therefore, diagnosis and treatment are often delayed. In 1 report, the initial treatment for bipolar disorder was delayed an average of 10 years from the onset of symptoms.[1] It has been estimated that as many as one to two thirds of individuals with bipolar disorder do not receive appropriate treatment due to misdiagnosis.[2] Importantly, a misdiagnosis of unipolar depression may lead to induction of mania in depressed patients with bipolar disorder treated with typical antidepressant monotherapy that increases mood instability and progression of the disease.[3–5]

The impact of misdiagnosis and delayed treatment on individuals with bipolar disorder is clinically significant and the consequences are long lasting. Patients with mood disorders are more likely to report declines in job status and income, fail to marry, and report deficits in psychosocial functioning (interpersonal relationships, enjoyment of recreational activities, and overall contentment) compared with controls.[6] Some reports indicate that the psychosocial deficits have been sustained as long as 2 years following recovery[6–8] and may be the result of residual symptoms.[8] In 1990, the World Health Organization identified bipolar

disorder as the sixth leading cause of disability-adjusted life years in the world among people aged 15 to 44 years. Further, it appears that 30% to 60% of individuals diagnosed with bipolar disorder fail to regain full function in terms of vocational and social performance.[9] Therefore, it is essential that health care providers fully understand the nature and intensity of the psychosocial impact of bipolar disorder in the United States, so that appropriate diagnostic procedures and treatments are offered earlier in the course of the disease to prevent human suffering and reduce the burden of illness.

In the present study, we surveyed subjects from a recent bipolar prevalence study[10] to examine the psychosocial impact of bipolar disorder, as identified using the Mood Disorder Questionnaire (MDQ), in a large U.S. community sample.

METHOD

Sampling and Survey Procedures

The prevalence study. Sampling and survey procedures for the bipolar prevalence study have been previously reported.[10] Subjects were sampled from the list of nationwide households maintained by National Family Opinion Inc. (NFO), a market research firm that maintains a panel of more than 600,000 U.S. households for marketing and survey purposes. Households are selected for the NFO panel as part of a stratified probability sample constructed to represent the U.S. population in terms of residence, age of the head of household, and household income and size. The survey instructed the panel member to have the male or female head of household respond to the survey; 60% of surveys were targeted toward men and 40% toward women to offset a female head of household bias. The Mood Disorder Questionnaire was mailed in January 2001 to 127,800 subjects aged 18 or older to screen for bipolar I and bipolar II disorder.

Survey procedures for the impact study. Four subgroups of subjects (N = 3059, aged 18 years and older) from the bipolar prevalence study were asked to participate in the bipolar impact study. Mailings went out in 4 waves to allow all subjects to complete the prevalence study before participating in the impact study.

Wave 1 included subjects with MDQ scores of 7 to 13 who did not participate in the MDQ validity study,[11] MDQ-positive subjects excluding subjects who participated in the MDQ validity study, MDQ-negative subjects with MDQ scores of 7 to 13, and subjects with MDQ scores of 0 to 6. Groups were balanced to match the weighted bipolar prevalence data set. Wave 1 was conducted from April 24, 2001, through June 18, 2001, and included 2005 surveys, of which 1634 (81.5%) were returned.

Waves 2 and 3 were mailed to MDQ-positive subjects only. Wave 2 was conducted from May 21, 2001, through June 26, 2001, and selected subjects who had completed the bipolar prevalence non-returner survey; 145 surveys were mailed and 82 (56.6%) were returned. Wave 3 was conducted from June 20, 2001, through August 6, 2001, and selected subjects from the unused (non-contact) subjects from the MDQ validity study[11]; 258 surveys were mailed and 174 (67.4%) were returned.

Wave 4 was sent on June 22, 2001, to 651 subjects from the MDQ validity study,[11] of which 564 (86.6%) were returned by August 6, 2001.

Measures

The MDQ. The MDQ[10] consists of 13 "yes/no" items derived from both DSM-IV criteria and clinical experience to assess mood, self-confidence, energy, sociability, interest in sex, talkativeness, distractibility, and other behaviors. Additional questions query co-occurrence of symptoms and the degree of functional impairment due to symptoms (4-point scale: 0 = no problem to 3 = serious problem). A positive MDQ screen was defined as endorsement of at least 7 symptoms/items, co-occurrence of 2 or more symptoms, and moderate or severe symptom-related impairment. The MDQ was validated in a psychiatric outpatient setting (sensitivity of 0.73 and specificity of 0.90)[12] and in the general U.S. population (sensitivity 0.281 and specificity 0.972)[11] against a diagnosis of bipolar I or II based on the Structured Clinical Interview for the DSM-IV.

Sheehan Disability Scale. The Sheehan Disability Scale is composed of 3 self-rated measures of symptom-related disruption in work, social/leisure life, and family life responsibilities. Subjects rated their impairment using a 10-point scale (1 = not at all disruptive to 10 = extremely disruptive).[13]

Social Adjustment Scale-Self Report. The Social Adjustment Scale-Self Report (SAS-SR) assesses the ability of an individual to adapt to, and derive satisfaction from, his or her social roles.[14–16] The SAS-SR includes questions on work for pay, unpaid work, and work as a student; social and leisure activities; relationships with extended family members, marital partner, and children; as well as perception of economic functioning. Each item is scored on a 5-point scale, with higher scores indicating poorer functioning. Scores for each role area are calculated by averaging the score for all answered items within that area. Study participants were asked to rate their function in the 4 weeks prior to study enrollment.

Other assessments. Additional questions were added to the impact survey to determine function in the 12 months prior to study participation. The impact survey also asked subjects to: (1) identify the number of days that bipolar symptoms occurred in the 12 months prior to study participation, (2) identify the number of days bipolar symptoms were disruptive in the 12 months prior to study participation, (3) identify additional medical

problems previously diagnosed by a health care provider, (4) indicate whether immediate or extended family members had histories of psychiatric illness, (5) identify impairment at work as a result of bipolar symptoms (if subjects were ever fired or if their supervisor was unhappy with their performance), and (6) indicate a history of being jailed, arrested, or convicted for offenses other than driving under the influence of alcohol.

Statistical Analysis

The sample was weighted to match 2000 U.S. Census data[17] in terms of age, gender, geographic region, household income, and household size.

Differences between subjects who screened MDQ-positive and those who screened MDQ-negative were compared using 2-tailed chi-square tests. The relationship of demographic factors to bipolar disorder was examined by entering 6 variables (age, gender, household income, race, geographic region, and market size) as predictors of the presence/absence of bipolar disorder into a logistic regression analysis. T tests were used to compare group means. Odds ratios (OR) and 95% confidence intervals (CI) were calculated for MDQ-positive versus MDQ-negative scores on the MDQ, Sheehan Disability Scale, and comorbid disorders, controlling for demographic differences between groups. Means were calculated for SAS-SR scores, adjusting for demographic and comorbid anxiety-like differences between groups. For each dichotomous outcome, the OR for the effect of MDQ status was estimated using a logistic regression model. Linear regression models were used for continuous outcomes to estimate differences between means for MDQ-positive and MDQ-negative groups. All logistic and linear models included age, gender, household size, household income, race, geographic region, and market size as main effects.

All statistical analyses were performed using the WesVar (version 4.1; WeStat, Rockville, Md.) software package designed to accommodate complex probability samples and weighted data.

Table 1. Demographic and Population Characteristics

Variable	Weighted[a] %	Unweighted Total (N = 2450) N (%)	Unweighted MDQ-Positive (N = 1167) N (%)	Unweighted MDQ-Negative (N = 1283) N (%)
Sex				
Male	48	1018 (42)	440 (38)	578 (45)
Female	52	1432 (58)	727 (62)	705 (55)
Ethnicity				
White	89	2107 (86)	986 (85)	1121 (87)
Black	5	163 (7)	96 (8)	67 (5)
Asian/Pacific Islander	1	17 (< 1)	6 (< 1)	11 (< 1)
American Indian, Aleut, Eskimo	< 1	26 (1)	16 (1)	10 (< 1)
Other	2	53 (2)	23 (2)	30 (2)
Unknown	3	84 (3)	40 (3)	44 (3)
Age, y				
18–24	12	200 (8)	91 (8)	109 (9)
25–34	20	472 (19)	232 (20)	240 (19)
35–44	21	613 (25)	318 (27)	295 (23)
45–54	19	566 (23)	308 (26)	258 (20)
55–64	11	322 (13)	153 (13)	169 (13)
≥ 65	17	277 (11)	65 (6)	212 (16)
Census region				
New England	5	113 (5)	49 (4)	64 (5)
Mid Atlantic	15	329 (13)	149 (13)	180 (14)
E. No. Central	16	406 (17)	202 (17)	204 (16)
W. No. Central	6	151 (6)	69 (6)	82 (6)
So. Atlantic	18	452 (18)	214 (18)	238 (19)
E. So. Central	6	168 (7)	88 (8)	80 (6)
W. So. Central	12	304 (12)	157 (13)	147 (11)
Mountain	7	186 (8)	88 (8)	98 (7)
Pacific	14	341 (14)	151 (13)	190 (15)
Urban vs. rural				
≤ 100,000 (rural)	20	607 (25)	316 (27)	291 (23)
100,000–499,999	15	384 (16)	191 (16)	193 (15)
500,000–2,000,000	21	496 (20)	238 (20)	258 (20)
> 2,000,000	44	963 (39)	422 (36)	541 (42)
Household size				
1	13	498 (20)	298 (26)	200 (16)
2	34	824 (34)	356 (30)	468 (36)
3	19	444 (18)	215 (18)	229 (18)
4	18	382 (16)	166 (14)	216 (17)
5 or more	16	302 (12)	132 (11)	170 (13)
Annual household income				
< $20,000	18	670 (27)	384 (33)	286 (22)
$20,000–34,999	18	530 (21)	278 (24)	252 (20)
$35,000–54,999	20	540 (22)	258 (22)	282 (22)
$55,000–84,999	21	410 (17)	162 (14)	248 (19)
≥ 85,000	23	300 (12)	85 (7)	215 (17)

[a]Weighted to represent the 2000 U.S. Census data.
Abbreviation: MDQ = Mood Disorder Questionnaire.

RESULTS

Survey Response Rates and Demographic Characteristics

Of the 3059 surveys sent out, 2450 completed surveys were returned and used for analysis (80% response rate). Demographic and population characteristics and geographic distribution of the responder sample are reported in Table 1. Briefly, 1167 subjects (mean age = 34.2 years, 62% women, median income $33,750) were MDQ-positive, and 1283 subjects (mean age = 45.6 years, 55% women, median income $48,750) were MDQ-negative.

Mood Disorder Questionnaire

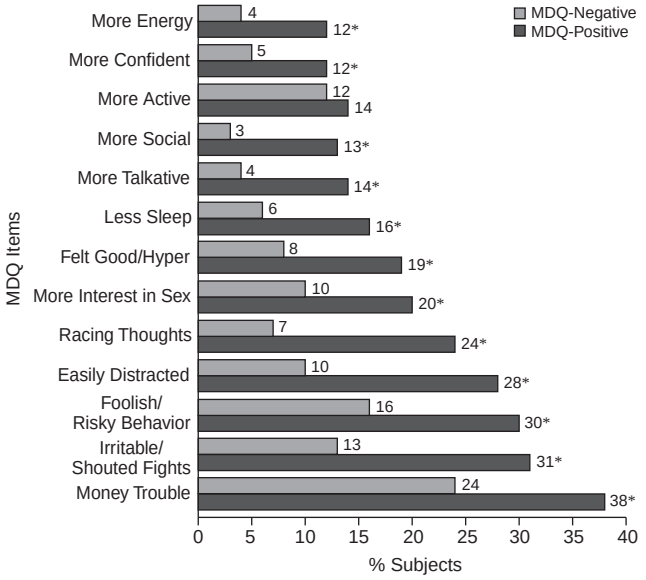
All 13 MDQ items were reported ($p < .0001$) more frequently by MDQ-positive subjects compared with MDQ-negative subjects: felt good/hyper (48% vs. 10%), irritable/shouted fights (80% vs. 31%), more confident

Table 2. ORs and 95% CI for Symptom Disruption Scores of MDQ-Positive Subjects Compared With MDQ-Negative Subjects[a]

MDQ Item	OR	95% CI
Had much more energy than usual	2.62	0.98 to 7.04
Felt much more self confident than usual	2.03	0.63 to 6.57
Were much more active/did many more things than usual	1.43	0.20 to 10.14
Were much more social or outgoing than usual/phoned friends in the middle of the night	2.98	1.14 to 7.85
Were much more talkative or spoke much faster than usual	5.09	1.42 to 18.27
Got much less sleep than usual and did not really miss it	2.29	0.68 to 7.79
Felt so good or hyper that others thought you were not your normal self/got into trouble	2.67	0.82 to 8.70
Much more interested in sex than usual	2.07	0.91 to 4.74
Thoughts raced through your head/couldn't slow your mind down	4.52	2.08 to 9.82
Were easily distracted/had trouble concentrating or staying on track	3.04	1.54 to 5.99
Did things that were unusual for you or things that were excessive, foolish, risky	2.75	1.20 to 6.30
Were so irritable that you shouted at people/started fights	3.11	1.60 to 6.05
Spent money that got you or your family into trouble	1.79	0.72 to 4.42

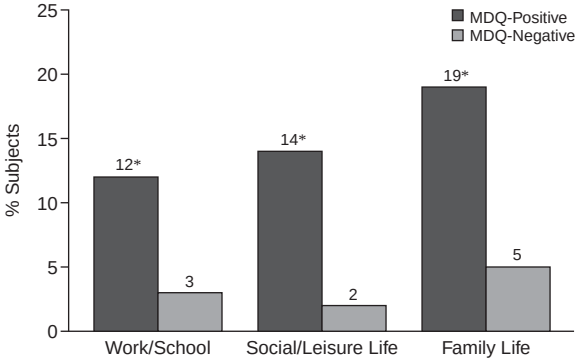
[a]Items adjusted for age, gender, household size, market size, income, race, and region.
Abbreviations: CI = confidence interval, MDQ = Mood Disorder Questionnaire, OR = odds ratio.

Figure 1. Percentage of MDQ-Positive vs. MDQ-Negative Subjects Who Rated the Impact of Their Symptom Disruption as 8, 9, or 10 on a 10-Point Scale by MDQ Item (8 = markedly disruptive to 10 = extremely disruptive)



*p < .01.
Abbreviation: MDQ = Mood Disorder Questionnaire.

Figure 2. Percentage of MDQ-Positive vs. MDQ-Negative Subjects Reporting Scores of 8, 9, or 10 on the Sheehan Rating Scale by Item (8 = markedly disruptive to 10 = extremely disruptive)



*p < .0001.
Abbreviation: MDQ = Mood Disorder Questionnaire.

(61% vs. 30%), less sleep (54% vs. 26%), more talkative (60% vs. 21%), racing thoughts (68% vs. 26%), easily distracted (74% vs. 30%), more energy (61% vs. 28%), more active (60% vs. 30%), more social (35% vs. 6%), more interest in sex (55% vs. 22%), foolish/risky behavior (57% vs. 10%), and money trouble (53% vs. 9%).

Figure 1 depicts the percentage of subjects, MDQ-positive vs. MDQ-negative, who rated the impact of their symptom disruption 8, 9, or 10 on a 10-point scale (8 = markedly disruptive to 10 = extremely disruptive) by MDQ item. ORs and 95% CI for this degree of symptom disruption are presented in Table 2.

MDQ-positive subjects aged 35 to 54 years reported significantly more symptom disruption as a result of being easily distracted (33.0% vs. 25.4% vs. 13.16%, p = .005) and having more interest in sex (24.4% vs. 17.8% vs. 11.3%, p = .05) compared with MDQ-positive subjects aged 18 to 34 years or 55 years or older, respectively.

MDQ-positive women reported significantly more symptom disruption as a result of irritability (36.2% vs. 26.2%, p = .001), increased confidence (15.6% vs. 9.9%, p = .02), talkativeness (17.3% vs. 11.4%, p = .02), distractibility (32.5% vs. 22.4%, p = .001), and spending money (43.6% vs. 33.6%, p = .01) compared with MDQ-positive men.

Sheehan Disability Scale

All 3 measures of disability on this scale exhibited significant evidence of impairment. Figure 2 contrasts the percentage of subjects (MDQ-positive vs. MDQ-negative) indicating impact ratings of 8, 9, or 10 on work/school, social/leisure, and family life responsibilities due

Table 3. Means and 95% CI for SAS-SR Items for MDQ-Negative Subjects Compared With MDQ-Positive Subjects[a]

		MDQ-Negative		MDQ-Positive		
Item	N	Mean	95% CI	Mean	95% CI	p Value
Total	2447	2.17	2.06 to 2.29	1.74	1.64 to 1.84	< .001
Work role	2074	1.91	1.79 to 2.02	1.47	1.39 to 1.54	< .001
Work for pay	1396	1.73	1.58 to 1.88	1.36	1.25 to 1.48	< .001
Housework	1716	2.08	1.94 to 2.22	1.69	1.60 to 1.79	< .001
Schoolwork	141	1.58	1.14 to 2.02	1.48	1.25 to 1.70	.570
Social and leisure activities	2442	2.26	2.12 to 2.40	1.88	1.78 to 1.98	< .001
Extended family interactions	2436	2.13	1.98 to 2.29	1.66	1.52 to 1.81	< .001
Primary relationships	1534	2.35	2.22 to 2.49	1.91	1.80 to 2.02	< .001
Parental roles	1011	1.87	1.75 to 2.00	1.53	1.40 to 1.67	< .001
Family unit	2074	2.36	2.17 to 2.56	1.73	1.55 to 1.91	< .001

[a]Items adjusted for gender, age, race, household size, market size, census region, and income.
Abbreviations: CI = confidence interval, MDQ = Mood Disorder Questionnaire, SAS-SR = Social Adjustment Scale-Self Report.

to bipolar symptoms. Significantly ($p < .0001$) more subjects who screened MDQ-positive reported difficulty with work/school (12% vs. 3%), social/leisure life (14% vs. 2%), or family life responsibilities (19% vs. 5%) than did subjects who screened MDQ-negative, respectively. ORs and 95% CI for MDQ-positive subjects compared with MDQ-negative subjects were: work/school OR = 4.49, 95% CI = 1.769 to 11.399; social/leisure life OR = 6.16, 95% CI = 2.322 to 16.362; and family life OR = 3.83, 95% CI = 1.785 to 8.226.

No significant age-related differences were observed in work, social/leisure, or family life for MDQ-positive vs. MDQ-negative subjects (data not shown). MDQ-positive women reported significantly more disruption in social/leisure life (17.2% vs. 10.8%, $p = .002$) and family life (23.62% vs. 15.8%, $p = .001$) in the 12 months prior to study participation compared with MDQ-positive men. Further, when measures of disability were adjusted for the incidence of comorbid anxiety-like conditions (anxiety, nervous breakdown, or panic attacks), differences between MDQ-positive and MDQ-negative subjects remained significant (work/school OR = 3.18, 95% CI = 1.129 to 8.97, $p = .29$; social/leisure life OR = 4.25, 95% CI = 1.539 to 11.712, $p = .006$; family life OR = 2.94, 95% CI = 1.367 to 6.336, $p = .006$).

Social Adjustment Scale

Total SAS-SR mean scores (T-scores) for MDQ-positive subjects (men = 3.2 [70], women = 2.3 [70]) were significantly ($p < .0001$) higher than those for MDQ-negative subjects (men = 1.7 [54], women = 1.8 [56]), based on a distribution with a mean of 50 and a standard deviation of 10. MDQ-positive subjects reported significantly ($p < .0001$) more difficulty with work role (1.95 vs. 1.46), social/leisure activities (2.40 vs. 1.87), and extended family interactions (2.22 vs. 1.66) compared with subjects who screened MDQ-negative. MDQ-positive subjects also experienced significantly ($p < .0001$) more difficulty with parental roles (1.82 vs. 1.49), primary relationships (2.38 vs. 1.91), and the family unit (2.48 vs. 1.72) compared with MDQ-negative subjects in the month prior to study participation. No significant age or gender effects were observed for the SAS-SR. The adjusted means and 95% CI for SAS-SR scores for MDQ-positive and MDQ-negative subjects, controlling for gender, age, race, household size, market size, region, and income, are presented in Table 3.

Symptom Days/Disruptive Symptom Days

The MDQ-positive subjects reported significantly ($p < .0001$) more days with bipolar symptoms in the 4 weeks prior to study participation compared with MDQ-negative subjects (8.61 days vs. 2.96 days, respectively), and symptoms were disruptive on more of those days (6.41 vs. 2.62, $p < .0001$).

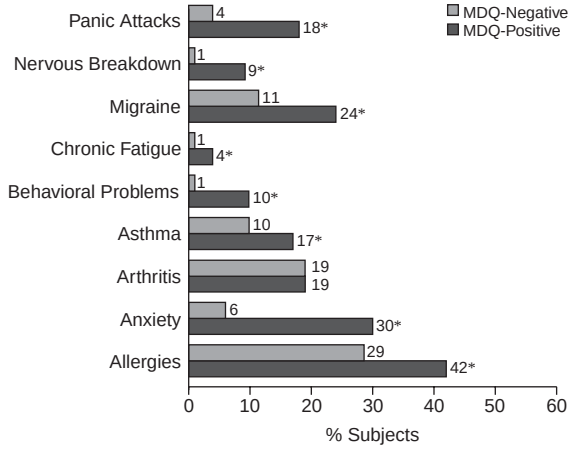
The MDQ-positive subjects reported significantly ($p < .0001$) more days with bipolar symptoms in the 12 months prior to survey completion compared with MDQ-negative subjects (79.78 days, 95% CI = 63.09 to 96.48 vs. 26.49 days, 95% CI = 20.33 to 32.67, respectively), and on more of these days, the bipolar symptoms were disruptive to social, family, and work normal function (58.25 days, 95% CI = 44.22 to 72.28 vs. 17.02 days, 95% CI = 11.86 to 22.18, respectively). Total symptom days for MDQ-positive subjects equaled 21.9% of the previous year compared with 7.4% for MDQ-negative subjects.

The MDQ-positive subjects 18 to 34 years of age experienced significantly ($p = .003$) more days of symptoms in the 4 weeks prior to study participation than did MDQ-positive subjects aged 35 to 54 years and 55+ years (9.61 vs. 7.52 vs. 5.59 days, respectively). MDQ-positive subjects aged 18 to 34 years experienced significantly ($p = .002$) more days with symptoms in the 12 months prior to study participation compared with subjects aged 35 to 54 years and 55+ years (105.0 vs. 78.0 vs. 53.3 days, respectively). No gender differences were observed in the number of days with bipolar symptoms or disruptive days of symptoms within MDQ-positive subjects.

Comorbid Physical and Psychiatric Symptoms

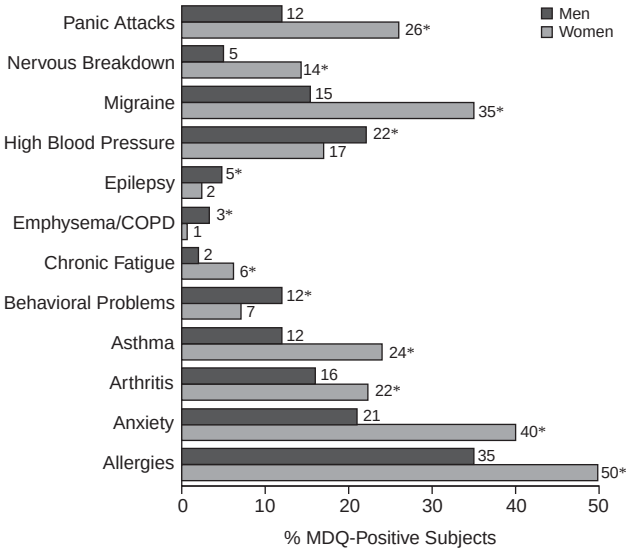
Behavioral problems, nervous breakdown, panic attacks (common lay terms used in the survey), anxiety, chronic fatigue, migraine, allergies, and asthma were significantly ($p < .05$) more common in MDQ-positive subjects compared with MDQ-negative subjects (Figure 3). MDQ-positive women reported significantly ($p < .05$) more comorbid allergies, anxiety, arthritis, asthma, chronic fatigue, migraine, nervous breakdown, and panic attacks than MDQ-positive men. MDQ-positive men reported significantly ($p < .05$) more behavioral problems, emphysema/chronic obstructive pulmonary disease, epi-

Figure 3. Percentage of MDQ-Positive vs. MDQ-Negative Subjects With Comorbid Physical and Psychiatric Symptoms



*p < .05.
Abbreviation: MDQ = Mood Disorder Questionnaire.

Figure 4. Percentage of Gender-Related Comorbid Physical and Psychiatric Symptoms Among MDQ-Positive Men and Women



*p < .05.
Abbreviations: COPD = chronic obstructive pulmonary disease, MDQ = Mood Disorder Questionnaire.

lepsy, and high blood pressure than MDQ-positive women (Figure 4). Odds ratios and 95% CI for MDQ-positive subjects compared with MDQ-negative subjects are presented in Table 4.

Family History

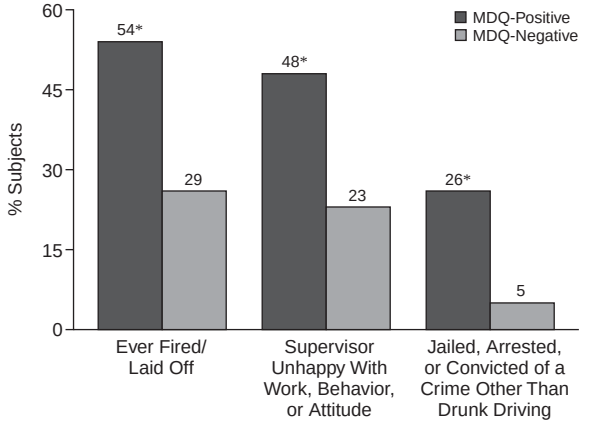
Significantly more MDQ-positive compared with MDQ-negative subjects reported a family history of bipolar disorder in the immediate family (11.9% vs. 5.4%, p = .012; β = 1.69, 95% CI = 0.827 to 3.467) as well as the extended family (9.38% vs. 3.7%, p = .008; β = 2.02, 95% CI = 0.788 to 5.109). Women who were MDQ-positive (15.76%) were significantly more likely to report a family history of bipolar disorder in the immediate family compared with MDQ-positive men (8.64%, p = .0001). No age-related differences were identified in immediate or extended family histories.

Table 4. ORs and 95% CI for Comorbid Physical and Psychiatric Symptoms in MDQ-Positive Compared With MDQ-Negative Subjects[a]

Symptom	OR	95% CI
Panic attacks[b]	7.42	4.29 to 12.83
Nervous breakdown[b]	20.77	9.25 to 46.63
Migraine	2.54	1.59 to 4.05
Chronic fatigue	6.81	1.79 to 25.95
Behavioral problems[b]	9.56	3.51 to 26.06
Asthma	2.01	1.16 to 3.50
Arthritis	2.27	1.32 to 3.88
Anxiety	8.00	5.04 to 12.73
Allergies	2.15	1.55 to 2.97

[a]Items adjusted for age, gender, household size, market size, income, race, and region.
[b]Common lay terms used in the survey.
Abbreviations: CI = confidence interval, MDQ = Mood Disorder Questionnaire, OR = odds ratio.

Figure 5. Percentage of MDQ-Positive vs. MDQ-Negative Subjects Who Reported Difficulties With Work Relationships and Law Enforcement



*p < .0001.
Abbreviation: MDQ = Mood Disorder Questionnaire.

Work and Legal Problems

Figure 5 contrasts the percentage of subjects (MDQ-positive vs. MDQ-negative) showing evidence of impairment at work or a history of being convicted and incarcerated for offenses other than driving under the influence of alcohol. Significantly (p < .0001) more MDQ-positive subjects compared with MDQ-negative subjects were ever fired or laid off (54% vs. 29%; OR = 2.44, 95%

CI = 1.167 to 3.56); had a supervisor who was unhappy with their work, behavior, or attitude (48% vs. 23%; OR = 2.98, 95% CI = 1.516 to 5.852); or were jailed, arrested, or convicted of a crime other than drunk-driving (26% vs. 5%; OR = 4.87, 95% CI = 3.01 to 7.89).

Age was an influence in whether MDQ-positive subjects experienced difficulties with the law. Significantly ($p = .004$) more MDQ-positive subjects 18 to 34 years of age were jailed compared with MDQ-positive subjects aged 35 to 54 years and 55+ years (28.2% vs. 25.5% vs. 11.4%, respectively). Gender was also an influence in whether MDQ-positive subjects experienced difficulties with the law. More MDQ-positive men were jailed, arrested, or convicted of a crime compared with MDQ-positive women (36.5% vs. 13.1%, $p < .00001$).

DISCUSSION

The present study confirms the results of several earlier reports that associated the symptoms of bipolar disorder with significant negative psychosocial impairment.[6–8] Subjects who screened positive for bipolar disorder using the MDQ reported significantly more difficulty with work, social/leisure, and family interactions as demonstrated with Sheehan Disability Scale and SAS-SR scores, compared with subjects who screened MDQ-negative. Further, age and gender effects were detected that were not previously described.

MDQ-positive women, compared with MDQ-positive men, more commonly reported irritability, increased confidence, talkativeness, distractibility, and impulsive spending. MDQ-positive women also exhibited more disruption in social and family life as documented with the Sheehan Disability Scale. Women who were MDQ-positive were also more likely to report a history of bipolar disorder in the immediate family. However, almost 3 times as many MDQ-positive men had been jailed, arrested, and convicted of a crime compared with MDQ-positive women. No gender differences were observed using the Social Adjustment Scale or in the number of days with disruptive bipolar symptoms.

Ad hoc questions evaluating days of disruptive bipolar symptoms revealed more impairment in MDQ-positive young adults 18 to 34 years of age compared with adults aged 35 years and older. Younger MDQ-positive subjects reported twice as many symptom days, as did older MDQ-positive subjects. In fact, younger subjects' mean number of symptom days equaled more than one fifth of the previous year, and symptoms disrupted daily activities more than 70% of the time. Younger adults were also more than twice as likely to have been incarcerated than MDQ-positive adults 55 years of age and older. This evidence of age-dependent psychosocial impairment is alarming and may be a function of the previously described delay in diagnosis and treatment of bipolar disorder following symptom onset.[1] The degree of psychosocial impairment in MDQ-positive younger adults is particularly disturbing, as these are the peak years of education, employability, and social/family relationship building. Patients with bipolar disorder are significantly less likely to improve their education and be employed across time[6]; they are also half as likely to marry, and those who do marry are twice as likely to divorce or separate.[6] An urgent need exists to develop strategies that can reduce the human suffering associated with bipolar disorder in young adults by reducing the lag between onset of symptoms, the experience of psychosocial impairment, and adequate diagnosis and treatment. As the patterns observed in MDQ-positive subjects in the present study confirm those from previous studies of diagnosed bipolar patients, the MDQ may be a useful tool to aid in the early detection and diagnosis of bipolar disorder.

MDQ-positive subjects reported 4 times the incidence of anxiety and panic attacks, behaviors known to complicate relationships and alter psychosocial functioning, compared with MDQ-negative subjects. Migraine headaches, an illness that has been associated with significant reductions in workplace productivity,[18,19] were reported twice as often by MDQ-positive subjects.[20,21] The strength of these associations suggests that physicians should routinely assess MDQ-positive patients for comorbid diseases that may complicate the course of their illness.

Results from the present study should be interpreted carefully. The MDQ is a screening tool, not a diagnostic instrument, and its sensitivity in the general U.S. population is lower than that observed in a psychiatric population.[11,12] Therefore, the present study may overrepresent the number of MDQ-positive subjects. The bias inherent in subject-rated data in bipolar disorder research is difficult to predict, as the current mood state of the subjects may cause them to over- or undervalue the impact of the disorder. Our study did not consider the current state of bipolar illness or its polarity. It is likely that patients may have been in remission as well as actively symptomatic while completing the survey. The sampling plan may also limit interpretation of the data, as proportionately more MDQ-positive subjects were selected to participate in the impact study. Despite these limitations, the impact data gathered from MDQ-positive subjects are significant and offer clinicians a representative view of the potential outcomes of bipolar disorder in the United States.

The significant negative impact on work, social, and family activities as the result of bipolar symptoms identified by the MDQ represents a medical and societal challenge, especially among young adults. Screening tools, such as the MDQ, could be helpful to identify patients at risk.[22] Treatment strategies that minimize the impact of bipolar symptoms and restore psychosocial function are greatly needed to return affected individuals to productive roles as citizens and family members.

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