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Twelve-month prevalence and disability of DSM-IV bipolar disorder in an Australian general population survey

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ABSTRACT

Background. There have been few large-scale epidemiological studies which have examined the prevalence of bipolar disorder. The authors report 12-month prevalence data for DSM-IV bipolar disorder from the Australian National Survey of Mental Health and Well-Being.

Method. The broad methodology of the Australian National Survey has been described previously. Ten thousand, six hundred and forty-one people participated. The 12-month prevalence of euphoric bipolar disorder (I and II) – similar to the euphoric-grandiose syndrome of Kessler and co-workers – was determined. Those so identified were compared with subjects with major depressive disorder and the rest of the sample, on rates of co-morbidity with anxiety and substance use disorders as well as demographic features and measures of disability and service utilization. Polychotomous logistic regression was used to study the relationship between the three samples and these dependent variables.

Results. There was a 12-month prevalence of 0·5% for bipolar disorder. Compared with subjects with major depressive disorder, those with bipolar disorder were distinguished by a more equal gender ratio; a greater likelihood of being widowed, separated or divorced; higher rates of drug abuse or dependence; greater disability as measured by days out of role; increased rates of treatment with medicines; and higher lifetime rates of suicide attempts.

Conclusions. This large national survey highlights the marked functional impairment caused by bipolar disorder, even when compared with major depressive disorder.

INTRODUCTION

There have been few large-scale epidemiological studies examining the prevalence of bipolar disorder. Those undertaken have reported considerable variation. Lifetime prevalence rates have ranged from 0·45% in the USA for euphoric-grandiose bipolar I disorder (Kessler *et al*. 1997) to 5·5% in Switzerland for bipolar I and II disorders (Angst, 1998). Similarly, 12-month rates vary considerably, from 0·37% for euphoric-grandiose bipolar I disorder (Kessler *et al*. 1997) to 1·3% for a broader definition of bipolar I disorder (Kessler *et al*. 1994).

This paper reports, for the first time, the 12-month prevalence data for bipolar disorder from the Australian National Survey of Mental Health and Well-Being (Andrews *et al*. 2001). That study (the methodology is detailed below) reported a 12-month prevalence rate for all mental disorders of 20% using DSM-IV and 23% using ICD-10.

In addition to examining prevalence rates for bipolar disorder, the current paper examines

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rates of co-morbidity with anxiety and substance use disorders, as well as measures of disability and service utilization. Rates for those with bipolar disorder are compared with subjects identified with major depressive disorder and the remainder of the sample.

METHOD

The Australian National Survey of Mental Health and Well-Being was conducted by the Australian Bureau of Statistics. The survey covered urban and rural areas across Australia. A multi-stage sample of private dwellings was drawn. Each state and territory was stratified and each dwelling within a stratum had an equal and known probability of selection. In all, 13 624 private dwellings were initially selected in the survey sample, and one adult member aged 18 years or over randomly selected as the possible respondent; 1477 people refused, in 558 households contact could not be made with the identified respondent, and in 948 households no interview occurred because the identified respondent could not communicate, there was death or illness in the household, or the interview was prematurely terminated. The sample did not include people in hospitals, nursing homes, hotels or gaols, or residents of households in remote and sparsely settled parts of the country. For this reason Aborigines were undersampled and are not further identified. A total of 10 641 people participated, with a response rate of 78·1 %. The age and gender characteristics of the sample were weighted to match the age and gender distribution in the national census.

Assessment

The whole interview was administered from a laptop computer. The Composite International Diagnostic Interview (CIDI v2.1; WHO, 1997; Andrews & Peters, 1998) was used to determine, using ICD-10 (WHO, 1992) and DSM-IV (APA, 1994) criteria, the presence of the following disorders:

(i) six anxiety disorders: panic disorder, agoraphobia, social phobia (simple phobias were not identified), generalized anxiety disorder, obsessive-compulsive disorder, post-traumatic stress disorder;

(ii) three affective disorders: major depression, bipolar disorder, dysthymia;

(iii) four substance use disorders: alcohol dependence and misuse/harmful use, drug dependence and misuse/harmful use;

(iv) cognitive impairment [Mini-Mental State Examination (MMSE); Folstein *et al*. 1975].

Screening questions were used to determine ICD-10 personality disorders (Loranger *et al*. 1997). The CIDI module for schizophrenia generates false positives in community samples, so a five-item psychosis screener was used instead. A parallel survey of low-prevalence disorders has been conducted in four sites (Jablensky *et al*. 2000) and that prevalence estimate was consistent with the present data. Disability was measured at the beginning of the interview by the 12-item Short Form Health Survey (SF-12), a measure of functional impairment (Ware *et al*. 1996), the role functioning scale of the Brief Disability Questionnaire (BDQ; Von Korff *et al*. 1996), and by the National Comorbidity Survey days-out-of-role questions. Perceived health need was based on the UK Survey of Psychiatric Morbidity questions. Consultations and treatments (including specifically medications) for mental health problems were identified.

All interviewers were experienced staff from the Australian Bureau of Statistics. Supervisors for each State and Territory were trained at the World Health Organization Training and Reference Centre for CIDI in Sydney and then had a subsidiary course on how to train field staff.

The 12-month prevalence of bipolar disorder was determined by identifying both those subjects with a hypomanic/manic episode in the 12 months prior to the interview, and those who had experienced an episode of major depression in the 12 months prior to the interview who also identified at least one clinically significant episode of at least 4 days of hypomania/mania at any stage in their entire lifetime. As the interview recorded duration of episode for the current 12-month period but not prior episodes, it was not possible to distinguish between bipolar I and II disorders.

The mania section of the CIDI contains two stem questions. Owing to a technical problem with the program, data collected on the second of the two stem questions for hypomania/mania, i.e. question F2 of the CIDI ('… has

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there been a period of at least four days when you were unusually irritable so that you complained, started arguments, shouted at or hit people?') was not stored in the data file. This meant that episodes of hypomania/mania were identified by stem question F1 alone, i.e. '… has there been a period of at least four days when you were so happy or excited that you got into trouble, or your family or friends worried about it, or a doctor said you were manic?'. Consequently, this paper deals with the 'euphoric' hypomanic/manic syndrome, similar to the 'euphoric-grandiose' syndrome of Kessler *et al.* (1997). Whereas Kessler *et al.* (1994) had initially reported on rates of bipolar disorder identified through both the 'euphoric' (F1) and 'irritable' (F2) CIDI stem questions, consequent clinical validation studies using the SCID identified high false positive rates in subjects identified as having bipolar disorder by the 'irritable' (F2) stem question only. In the Dutch NEMESIS Survey (M. ten Have, personal communication), 22·3% of those who responded positively to F1 had DSM-III-R bipolar I disorder, or bipolar disorder NOS. A further 5·4% of those with bipolar disorder or bipolar disorder NOS only answered positively to F2. This would suggest that not asking F2 may lead to an underestimate of the 12-month prevalence of bipolar disorder of approximately 5%, but would reduce the false positive rate considerably.

Data analysis

Routine data analysis procedures were used but, as a result of the complex sample design and weighting, special software was required to estimate standard errors. The standard error-of-prevalence estimates and confidence interviews around odds ratios (OR) derived from logistic regression models were estimated using delete-one jackknife repeated replication in 30 design-based subsamples (Kish & Frankel, 1974). These calculations used the SUDAAN software package (Shah *et al.* 1997).

Logistic regression analysis was used to study the relationship between different diagnostic subsample and demographics, co-morbid disorders and impairment. Given that the outcome variable in each logistic regression contained three categories (bipolar disorder, major depressive disorder, and the rest of the sample) polychotomous logistic regression analysis was used (Hosmer & Lemeshow, 1989). For the purposes of the current study two out of the three possible comparisons between categories of the outcome variable were of interest (bipolar disorder *versus* the rest of the sample and bipolar disorder *versus* major depressive disorder). The third comparison (major depressive disorder *versus* the rest of the sample) was not of interest – this has been reported elsewhere (Andrews *et al.* 2001) – and therefore is not reported. ORs derived from logistic regression models are presented as either bivariate or multivariate ORs. Bivariate ORs come from models where only one predictor was entered. Multivariate ORs come from models where all predictors were entered into the model at the same time to obtain estimates that account for the effects of the other variables.

Disability variables were dichotomized. 'Disabled' on the SF-12 was defined by a score of $\leqslant 40$ on the mental state scale, while 'disabled' on the Disability Days Scale was defined by a score of 1 or more.

Table 1. *Prevalence* (*standard error*) *of DSM-IV 12-month bipolar disorder by age and sex*

Age (years)	Male % (S.E.)	Female % (S.E.)	Total % (S.E.)
18–24	0·7 (0·4)	1·0 (0·6)	0·9 (0·3)
25–34	1·0 (0·6)	0·6 (0·3)	0·8 (0·4)
35–44	0·9 (0·3)	0·7 (0·3)	0·8 (0·2)
45–54	0·4 (0·2)	0·3 (0·2)	0·4 (0·1)
55+	0·1 (0·1)	0·1 (0·1)	0·1 (0·1)
Total	0·6 (0·2)	0·5 (0·1)	0·5 (0·1)

RESULTS

The weighted prevalence estimates of 12-month DSM-IV bipolar disorder by age and sex are presented in Table 1. Fifty-three people fulfilled DSM-IV criteria for bipolar disorder (I or II) in the 12-month period prior to the interview, a prevalence of 0·5%. Thirteen individuals experienced a manic ($n=12$) or hypomanic ($n=1$) episode in that period of time, while a further 40 individuals who experienced an episode of major depression in this 12 months identified at least one prior episode of at least 4 days of hypomania or mania. The prevalence of bipolar disorder was highest in the youngest age

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Table 2. *Bivariate and multivariate associations between 12-month DSM-IV bipolar disorder, major depressive disorder and sociodemographics*

	Bivariate[a]				Multivariate[b]			
	Bipolar disorder *versus* rest of the sample		Bipolar disorder *versus* major depressive disorder		Bipolar disorder *versus* rest of the sample		Bipolar disorder *versus* major depressive disorder	
Demographic correlate	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Sex								
Males	1·0	—	1·0	—	1·0	—	1·0	—
Females	0·9	0·4–1·9	0·5*	0·2–0·9	0·8	0·4–1·8	0·4*	0·2–1·0
χ^2_2 (p)	53·83** ($p<0·001$)				39·55** ($p<0·001$)			
Age (years)								
18–24	1·0	—	1·0	—				
25–34	0·9	0·2–4·1	1·0	0·2–4·4				
35–44	0·9	0·4–2·2	1·0	0·4–2·3				
45–54	0·4	0·2–1·1	0·5	0·2–1·2				
55+	0·1*	0·0–0·9	0·3	0·0–2·1				
χ^2_8 (p)	106·48** ($p<0·001$)							
Marital status								
Married/de facto	1·0	—	1·0	—	1·0	—	1·0	—
Widowed/separated/divorced	3·1*	1·5–6·2	1·6	0·7–2·9	4·8*	2·3–10·1	2·4*	1·1–5·2
Never married	3·0*	1·1–8·1	1·9	0·6–5·4	2·2	0·5–9·6	1·6	0·3–8·0
χ^2_4 (p)	74·80** ($p<0·001$)				35·10* ($p<0·001$)			
Education								
Higher qualification	1·0	—	1·0	—				
No higher qualification	1·0	0·4–2·4	0·7	0·3–1·7				
χ^2_2 (p)	19·94** ($p<0·001$)							
Employment status								
Employed	1·0	—	1·0	—				
Unemployed	2·1	0·5–8·7	0·9	0·2–4·2				
Not in the labor force	0·8	0·3–2·0	0·7	0·3–1·7				
χ^2_4 (p)	20·79** ($p<0·001$)							
Country of birth								
Australia	1·0	—	1·0	—				
Other English-speaking country	0·6	0·2–1·7	0·9	0·3–2·5				
Other non-English-speaking country	1·5	0·4–5·5	1·8	0·5–6·9				
χ^2_4 (p)	7·31 ($p=0·121$)							
Household composition								
Living with others	1·0	—	1·0	—				
Living alone	1·2	0·6–2·3	0·8	0·4–1·6				
χ^2_2 (p)	24·13** ($p<0·001$)							
Urbanicity								
Metropolitan area	1·0	—	1·0	—				
Rural centre	1·1	0·4–3·6	0·9	0·3–3·2				
Other rural area	0·7	0·3–1·4	0·8	0·4–1·7				
χ^2_4 (p)	5·56 ($p=0·234$)							

[a] Bivariate odds ratios (ORs) calculated from logistic regression models with only one predictor in the model.
[b] Multivariate ORs calculated from logistic regression models adjusting for other predictors (variables were only entered into the model if they were significant at the bivariate level).
* $p<0·05$; ** $p<0·001$.
CI, Confidence interval.

group and did not differ between males and females.

Demographic variables

The associations between 12-month DSM-IV bipolar disorder and demographic variables are examined in more detail in Table 2. The bivariate ORs comparing bipolar disorder cases with the rest of the sample confirm the findings in Table 1 that there is no association between bipolar disorder and gender [OR 0·9; 95% confidence interval (CI) 0·4–1·9] and that the odds of having bipolar disorder are significantly lower for the oldest age group compared to the

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Table 3. *Weighted prevalence and odds ratios (ORs) of co-morbid 12-month DSM-IV disorders in people with bipolar disorder, major depressive disorder and the rest of the sample*

Co-morbid disorders	Bipolar disorder % (S.E.)	Major depressive disorder % (S.E.)	Rest of the sample % (S.E.)	Bipolar disorder *versus* rest of the sample		Bipolar disorder *versus* major depressive disorder	
				OR[a]	95% CI	OR[a]	95% CI
Model 1: Individual disorders							
Dysthymia	7·8 (3·0)	11·6 (1·2)	0·3 (0·1)	8·4*	2·1–33·5	0·6	0·2–1·8
Panic disorder with/without agoraphobia	26·3 (6·0)	12·4 (1·4)	1·1 (0·1)	9·1**	3·3–24·8	2·2	0·9–5·4
Agoraphobia	6·2 (3·4)	7·9 (1·0)	1·1 (0·1)	3·5	0·7–18·3	1·0	0·2–4·7
Social phobia	19·1 (6·3)	14·5 (1·3)	1·3 (0·1)	4·1*	1·1–15·5	1·3	0·4–4·2
Generalized anxiety disorder	25·3 (5·7)	25·9 (2·2)	1·9 (0·2)	4·3*	1·9–10·1	0·7	0·3–1·6
Obsessive-compulsive disorder	9·5 (3·7)	5·5 (0·9)	0·3 (0·1)	11·5*	2·3–58·5	1·6	0·4–5·7
Post-traumatic stress disorder	10·6 (5·1)	12·4 (1·1)	0·5 (0·1)	3·9*	1·0–15·5	0·5	0·1–2·3
Drug abuse/dependence	26·4 (5·5)	7·6 (1·1)	2·4 (0·2)	5·2**	2·5–11·0	3·7*	1·7–8·1
Alcohol abuse/dependence	28·9 (6·2)	16·4 (1·2)	5·2 (0·2)	3·4*	1·4–8·3	1·4	0·6–3·2
Model 2: Disorder group							
Any affective disorder	7·8 (3·0)	11·6 (1·2)	0·3 (0·1)	6·5*	1·9–22·8	0·5	0·2–1·4
Any anxiety disorder	52·0 (8·7)	45·9 (2·3)	5·2 (0·3)	8·9**	4·4–16·8	1·0	0·5–1·9
Any substance use disorder	38·9 (6·8)	21·3 (1·2)	6·7 (0·2)	4·7**	2·7–8·2	2·1*	1·2–3·7
Any personality disorder	44·3 (10·6)	28·5 (2·2)	4·7 (0·3)	5·5**	2·4–12·5	1·9	0·8–4·4
Any medical condition	44·5 (12·1)	46·4 (1·9)	37·9 (0·6)	1·2	0·4–3·1	0·9	0·3–2·5
Model 3: Number of disorders							
One other disorder	16·9 (9·0)	25·8 (1·5)	8·9 (0·4)	4·8	0·9–26·7	0·8	0·1–4·6
Two or more other disorders	47·7 (9·2)	31·6 (2·1)	2·3 (0·2)	52·3**	21·5–128	1·8	0·7–4·5
Model 4: Any other disorder	65·3 (10·3)	62·6 (2·0)	14·1 (0·5)	11·4**	4·4–29·5	1·1	0·4–2·9

[a] The ORs were derived from four different models: Model 1, each single mental disorder controlling for the presence of all other single mental disorders; Model 2, each disorder group controlling for the presence of all other disorder groups; Model 3, a summary measure of the number of mental disorders where no other mental disorder is the reference category; Model 4, any mental disorder *versus* no other mental disorder.

CI, Confidence interval.

youngest age group (OR 0·1; 95% CI 0·0–0·9). The bivariate ORs also show that, compared with the rest of the sample, those with bipolar disorder are more likely to be unmarried (widowed, separated, divorced or never married).

When comparing bipolar disorder cases with those with major depressive disorder a gender difference is apparent, with bipolar disorder cases half as likely to be female as those with major depressive disorder. This gender difference remains significant when all demographic variables are examined in a multivariate model. Additionally, the multivariate analysis shows that those with bipolar disorder are more likely to be widowed, separated or divorced than both the rest of the sample and those with major depressive disorder. While some of the remaining demographic variables (education, employment and household composition) were significant overall, the significant differences did not lie in the comparisons of interest (that is, the differences lay in the comparison between major depressive disorder and the rest of the sample).

Co-morbid disorders

The weighted prevalence and ORs of co-morbid disorders in people with bipolar disorder, major depressive disorder and the rest of the sample are presented in Table 3. Bipolar disorder cases were more likely than the rest of the sample to report symptoms that meet criteria for all individual disorders except agoraphobia (ORs range from 3·5 to 11·5). When disorders were grouped together the results showed that those with bipolar disorder were significantly more likely to have any anxiety disorder (OR 8·9; 95% CI 4·4–16·8), any substance use disorder (OR 4·7; 95% CI 2·7–8·2), and any personality disorder (OR 5·5; 95% CI 2·4–12·5). However, compared with the rest of the sample, those with bipolar disorder were no more likely to suffer from any medical condition.

Compared with those with major depressive disorder, overall rates of anxiety disorders were no greater in the bipolar disorder group. However, the odds of having panic disorder with or without agoraphobia approached significance

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Table 4. *Relationship between measures of impairment and DSM-IV 12-month bipolar disorder, major depressive disorder and the rest of the sample*

Impairment variables[a]	Bipolar disorder Mean (S.E.)	Major depressive disorder Mean (S.E.)	Rest of the sample Mean (S.E.)	Bipolar disorder *versus* rest of the sample OR[b]	95% CI	Bipolar disorder *versus* major depressive disorder OR[b]	95% CI
Disability							
Mental component scale of SF-12	43·3 (2·0)	38·9 (0·4)	52·9 (0·1)	4·9*	2·0–12·3	0·8	0·3–1·9
Role functioning scale of BDQ	2·7 (0·5)	2·9 (0·1)	0·8 (0·0)	4·1**	2·0–8·2	1·0	0·5–1·9
Disability days scale	7·2 (1·5)	7·5 (0·3)	2·6 (0·1)	5·1**	2·9–8·8	2·0*	1·1–3·7
Neuroticism	5·7 (0·5)	5·8 (0·1)	2·4 (0·0)	4·7*	1·6–13·9	1·0	0·3–3·4
	% (S.E.)	% (S.E.)	% (S.E.)				
Health service utilization							
Any health professional	70·0 (8·8)	62·7 (1·9)	7·2 (0·3)	19·5**	8·1–46·8	1·6	0·7–3·8
Mental health professional	32·6 (8·5)	21·1 (1·7)	1·7 (0·2)	12·9**	5·4–30·5	1·9	0·9–4·4
Treatment received							
Any treatment	67·8 (8·8)	58·5 (2·2)	6·3 (0·3)	19·8**	8·2–47·9	1·7	0·7–4·1
'Medicines or tablets' treatment	60·4 (9·1)	40·1 (2·0)	3·6 (0·2)	26·7**	11·2–63·8	2·8*	1·2–6·5
Suicide							
Lifetime suicidal ideation	64·4 (8·6)	49·0 (2·5)	11·6 (0·4)	7·8**	4·0–15·2	2·1	0·9–4·6
Lifetime suicide attempt	26·1 (5·4)	14·2 (1·4)	2·2 (0·1)	7·5**	3·5–16·2	2·4*	1·1–5·0

[a] Means are presented for continuous variables and percentages are presented for categorical variables.
[b] Odds ratios (ORs) were derived from separate logistic regression models each controlling for the presence of sex and marital status as well as any mental disorder. For the purposes of the logistic regression continuous variables were dichotomized. Disability on the mental component scale of the SF-12 was indicated by a score of 40 or less. Disability on the role functioning scale of the BDQ was indicated by a score of two or more. Disability on the disability days scale was indicated by a score of one or more days. Neuroticism was indicated by a score of two or more on the Neuroticism scale of the EPQ.
CI, Confidence interval.

(OR 2·2; 95% CI 0·9–5·4). The bipolar disorder group had a significantly greater likelihood of any substance use disorder (OR 2·1; 95% CI 1·2–3·7). This effect was driven by the increased likelihood of drug abuse or dependence (OR 3·7; 95% CI 1·7–8·1) as opposed to alcohol abuse or dependence (OR 1·4; 95% CI 0·6–3·2).

Impairment

Disability and neuroticism

As detailed in Table 4, bipolar disorder cases were more disabled than the rest of the sample as assessed by all three measures of disability (SF-12: OR 4·9; 95% CI 2·0–12·3; BDQ: OR 4·1; 95% CI 2·0–8·2; 'disability days': OR 5·1; 95% CI 2·9–8·8). Furthermore, bipolar cases were significantly more disabled than cases of major depressive disorder as measured by the disability days scale (OR 2·0; 95% CI 1·1–3·7). Neuroticism was significantly higher in the bipolar disorder group as compared with the rest of the sample, but no different when compared with those with major depressive disorder.

Health service utilization and treatment received

Those with bipolar disorder were significantly more likely to consult any health professional (OR 19·5; 95% CI 8·1–46·8) and a specialist mental health professional (OR 12·9; 95% CI 5·4–30·5) than the rest of the sample, but no more likely than those with major depressive disorder. Bipolar disorder cases were also more likely to report that they received any kind of treatment (OR 19·8; 95% CI 8·2–47·9) and that they received treatment involving medication (OR 26·7; 95% CI 11·2–63·8) than the rest of the sample. Furthermore, compared with the major depressive disorder cases, those with bipolar disorder were significantly more likely to report that they received treatment involving medication (OR 2·8; 95% CI 1·2–6·5).

Suicidal ideation and suicide attempts

Cases with bipolar disorder were more likely than the rest of the sample to have thought about suicide (OR 7·8; 95% CI 4·0–15·2) and to have made a suicide attempt (OR 7·5; 95% CI 3·5–16·2) some time in their lifetime. The

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relationship between bipolar disorder and suicide attempt remained when bipolar disorder cases were compared with those with major depressive disorder (OR 2·4; 95% CI 1·1–5·0).

DISCUSSION

Prevalence rates and demographic variables

The Australian National Survey of Mental Health and Well-Being comprises one of the largest-population mental health prevalence surveys, with 10 641 respondents, compared with 10 108 in the British National Survey of Psychiatric Morbidity (Jenkins *et al*. 2003), 8098 in the US National Comorbidity Survey (Kessler *et al*. 1994, 1997), 7076 in the Dutch NEMESIS survey (Bijl *et al*. 1998; ten Have *et al*. 2002), and 2953 in the Hungarian survey of Szadoczky *et al*. (1998). Our survey identified a 0·5% 12-month prevalence rate for the euphoric DSM-IV bipolar disorder syndrome (I and II combined). The survey was not designed to derive lifetime prevalence figures. Kessler *et al*. (1997) – who also used a similar 'euphoric-grandiose' syndrome definition – reported a 12-month rate of 0·37% for CIDI-derived DSM-III-R bipolar I disorder, whereas when both 'euphoric' and 'irritable' stem questions were employed (Kessler *et al*. 1994) a 12-month prevalence rate for bipolar I disorder of 1·3% was identified. Those studies which have examined combined rates for bipolar I and II disorders have found 12-month prevalences of 1·0 or 1·1% (Weissman *et al*. 1988; ten Have *et al*. 2002). Szadoczky *et al*. (1998) reported a 0·9% 12-month prevalence rate for mania in Hungary. As noted, our use of the 'euphoric' bipolar disorder syndrome probably led to an underestimate of the prevalence, but a reduction in the rate of false positive diagnoses.

As previously demonstrated by Weissman *et al*. (1988, 1996), we found an almost equal gender ratio for those with bipolar disorder. This was significantly different to the depressed sample, where there was the expected female preponderance. Our finding that bipolar disorder subjects were younger than the rest of the sample was consistent with Kessler *et al*. (1997) and ten Have *et al*. (2002). (This consistent observation of a younger population is somewhat surprising, as a number of apparent unipolar patients 'convert' to bipolar status with increasing age.) Similarly, our finding of higher rates of subjects who are widowed, divorced or separated compared with the rest of the population is in line with previous reports (Kessler *et al*. 1997). The demonstration of higher rates of disrupted relationships in bipolar disorder compared with depressed subjects has not been previously reported.

Co-morbidity with other disorders

Our study demonstrated markedly high rates of co-morbidity with dysthymia, most of the anxiety disorders, drug and alcohol disorders, and personality disorder. With the exception of agoraphobia, these were all significantly more common in the bipolar disorder subjects than in the rest of the sample. These findings were consistent with those of Kessler *et al*. (1997) who found similarly higher rates of dysthymia (OR 13·5), any anxiety disorder (OR 31·2) and substance use disorder (OR 6·4) in the bipolar disorder subjects compared with the remainder of the sample.

Previous studies have also compared rates of specific co-morbid anxiety disorders in bipolar disorder subjects with those with depression. In the Epidemiological Catchment Area survey, Chen & Dilsaver (1995) found higher rates of panic disorder in their bipolar disorder sample. In our sample, there was no significant difference between the rates of panic disorder in those two groups, though there was a trend towards a higher rate in the bipolar subjects. Kessler *et al*. (1999) reported high rates of co-morbidity with social phobia, i.e. 47·1% of those with bipolar disorder (OR 5·9). Such a rate was higher than that found in their depressed sample. While our rates were higher than those seen in the rest of the sample, they were no higher than those observed in the depressed subjects. As 40 of our 53 bipolar disorder patients had only experienced a depressive episode in the 12-month period, it is not possible to exclude the possibility that the co-morbidity with anxiety was more related to such depressive episodes than the bipolar disorder *per se*.

Rates of co-morbid drug and alcohol abuse and dependence were higher than those seen in the rest of the sample. Moreover, rates of drug abuse and dependence were higher than found in those with depression (OR 3·7). To our knowledge, relative rates of substance abuse in bipolar

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disorder and depressed subjects in a general population survey have not been previously reported.

Medical conditions were no more common in the bipolar disorder subjects than either the rest of the sample or those with depression.

Impairment

Previous general population surveys of the prevalence of mental illness have employed limited measures of disability. Kessler *et al*. (1997) found their bipolar I disorder subjects to be over-represented in the lowest-income-earning strata, while ten Have *et al*. (2002) found the bipolar disorder group to have more days of bed rest and absenteeism than the rest of their sample. Zwerling *et al*. (2002), using data from the US National Health Interview Survey, which included over 11 000 respondents, found that bipolar disorder patients were less likely to work (OR 0·60). While we found no difference in employment status, our study found bipolar disorder subjects to be more disabled than the rest of the sample as defined by each of SF-12, BDQ and disability days. Furthermore, once demographic factors and co-morbid disorders were controlled, bipolar disorder subjects were more disabled than even individuals with major depressive disorder in terms of days out of role, highlighting the marked impairment resulting from this condition.

While the bipolar disorder patients had substantially higher consultation rates for mental health problems than the rest of the sample, these were no different to those with depression. The use of medicines, however, was more prevalent in the bipolar disorder sample than in major depression (OR 2·8). Comparative treatment rates in these two groups have not been reported in previous epidemiological surveys.

Lifetime rates of suicide attempts were significantly more common in bipolar subjects (26%) than in the rest of the sample (2%) and than in those with depression (14%). This finding is consistent with Kessler *et al*. (1997) who found higher rates in their bipolar I sample (48%) than in those with depression (15%).

Strengths and limitations of the study

The strengths of this report from a general population survey were the large number of respondents, the comparison against both depressed subjects and the rest of the sample, and statistical control for relevant potential confounding variables. The major limitations were the use of only the euphoric syndrome of bipolar disorder, and the inability to distinguish between bipolar I and II disorders.

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