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Bipolar disorder with frequent mood episodes in the New Zealand Mental Health Survey

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Abstract

Background—Rapid cycling bipolar disorder has been studied almost exclusively in clinical samples.

Methods—A national cross-sectional survey in 2003-04 in New Zealand used the Composite International Diagnostic Interview (CIDI 3.0). Diagnosis was by DSM-IV. Depression severity was assessed with the Quick Inventory of Depressive Symptoms (QIDS) and role impairment using Sheehan Scales. Complex survey analyses compared percentages and means, and used logistic regression and discrete time survival analyses. Frequent mood episodes (FME) in the past twelve months (4+) were used as an indicator of rapid cycling.

Results—The lifetime prevalence of bipolar disorder (I+II) was 1.7%. Twelve-month prevalence was 1.0%: 0.3% with FME and 0.7% with No-FME (1-3 episodes). Another 0.7% had no episodes in that period. Age-of-onset was earliest for FME (16.0 years versus 19.5 and 20.1, $p < .05$). In the past twelve months, weeks in episode, total days out of role and role impairment in the worst month were all worse for the FME group ($p < .0001$) but both the FME and No-FME groups experienced severe and impairing depression. Lifetime suicidal behaviours and comorbidity were high in all three bipolar groups but differed little between them. About three-quarters had ever received treatment but only half with twelve-month disorder made treatment contact.

Limitations—Recall, not observation of episodes.

Conclusions—Even in the community the burden of bipolar disorder is high. Frequent mood episodes in bipolar disorder are associated with still more disruption of life than less frequent episodes. Treatment is underutilized and could moderate the distress and impairment experienced.

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Conflict of Interest

The authors declare that they have no conflicts of interest.

Contributors

Authors Oakley Browne and Wells led the research team for this survey. Authors Scott and McGee were also members of the research team. For this paper Wells searched the literature and wrote the first draft of the manuscript and McGee carried out some of the analyses. All authors contributed to and have approved the final manuscript.

Keywords

bipolar disorder; rapid cycling; mania; depression; health surveys

Introduction

A number of cross-sectional epidemiological studies have reported on the prevalence of bipolar disorder, some reporting only on Bipolar I (Grant et al., 2005; Kessler et al., 1997; Weissman et al., 1996; Wells et al., 1989) whereas others include both Bipolar-I and Bipolar-II (Mitchell et al., 2004; Szadoczky et al., 1998) or even a broad definition of bipolar spectrum disorder (Kessler et al., 2005a; Kessler et al., 2005b; Oakley Browne et al., 2006b; Wells, 2006). Lifetime prevalences range from 0.5 for euphoric-grandiose Bipolar-I disorder (Kessler et al., 1997) to 5.5% for bipolar disorder in the longitudinal study of Angst and colleagues (Angst, 1998). These studies provide evidence on the disability associated with bipolar disorder in the community. Nonetheless, most cross-sectional studies have not been designed to collect information on the frequency of mood episodes, so it has not been possible to see to what extent the disability results from rapid cycling or from the severity of mood episodes regardless of frequency.

Rapid cycling is a DSM-IV course specifier, based on frequency of mood episodes, for both Bipolar-I and Bipolar-II disorders. To meet criteria for rapid cycling requires four or more mood episodes within a year. These episodes may be of mania/hypomania (minimum duration of 4 days) or of depression (minimum duration of 2 weeks) with the count summed regardless of polarity (Bauer et al., 2008).

There have been a number of clinical studies of rapid cycling, many of which include some years of follow-up (Azorin et al., 2008; Coryell et al., 2003; Cruz et al., 2008; Judd et al., 2003; Judd et al., 2002; Kupka et al., 2003; Kupka et al., 2005). The most recent overview (Bauer et al., 2008) indicates an overall prevalence of rapid cycling of 12-24% among bipolar patients and notes that it is associated with a relatively poor response to pharmacological treatment. Some studies have found more rapid cycling among women and Bipolar-II patients, and earlier age of onset among those with rapid cycling. In their long-term follow-up study, Coryell et al. (Coryell et al., 2003) found higher depressive morbidity and suicidal behaviour among rapid cyclers.

Only studies in the community can establish whether the results from clinical studies apply to the population and not just to those reaching treatment services. The first such paper which has attempted to investigate rapid cycling in the community used data from the National Comorbidity Replication (NCS-R), a cross-sectional survey in the US (Nierenberg et al., 2009). Although full criteria for DSM-IV rapid cycling were not operationalized in the interview, the frequency of mood episodes of either polarity in the past 12 months was assessed using Version 3 of the Composite International Diagnostic Interview (CIDI 3.0). Among those with bipolar disorder (I or II), the presence of four or more mood episodes in the past 12 months was used as a proxy indicator of rapid cycling and referred to as Frequent Mood Episodes (FME). Respondents with FME were compared with those with fewer than four episodes in the past 12 months, and also with those meeting lifetime criteria for bipolar disorder but without a recent episode. FME was common – half of those with any bipolar disorder episode in the past 12 months had FME. Childhood risk factors, comorbidity and current socio-demographics did not differ between FME and No-FME groups, although both groups differed from those without bipolar disorder. There were some differences in clinical severity and role impairment for mania and hypomania.

The New Zealand Mental Health Survey (NZMHS), like the NCS-R, also used the CIDI 3.0 for assessment. Using a broad definition of bipolar disorder (I, II and subthreshold), polarity was strongly associated with interference with life for the worst month in the past 12 months, as assessed using Sheehan scales for the role areas of household maintenance, work or study, intimate relationships and social life. Those with depression only had a mean interference across all four role areas of 5.4 (95% CI 4.9, 6.3), those with mania/hypomania only 4.0 (3.5, 4.5) whereas those with both depression and mania/hypomania had mean interference of 7.4 (7.0, 7.7) (Wells, 2006). Because the low interference with life for mania/hypomania might have resulted from the inclusion of the subthreshold cases, these analyses were re-run for Bipolar-I and Bipolar-II alone with similar results although slightly higher interference levels: 5.7 (4.9, 6.4) for depression alone, 4.6 (3.8, 5.5) for mania/hypomania alone, and 7.5 (7.0, 7.9) for both (unpublished). These results suggest that perhaps more frequent mood episodes (i.e. rapid cycling) account for the higher interference with life for cases with both polarities within twelve months.

With rapid cycling assessed by the proxy of four mood episodes in the past twelve months (Frequent Mood Episodes – FME), this paper uses data from the NZMHS to report on:

- The prevalence of FME from a national community sample
- The age-of-onset and lifecourse of bipolar disorder in relation to FME
- Childhood risk factors
- Lifetime comorbidity
- Suicidality subsequent to the onset of bipolar disorder
- Current socio-demographic correlates
- Lifetime and twelve-month treatment
- Severity and role impairment in the past twelve months

Methods

Detailed reports of the sample and interview have already been presented (Wells et al., 2006a; Wells et al., 2006b).

Sample

The New Zealand Mental Health Survey was a national cross-sectional survey with a multi-stage probability sample of New Zealanders aged 16 years or more living in permanent private dwellings. The Primary Sampling Units were 1320 small census units systematically sampled throughout the whole country. Within each meshblock, households were selected and then one person aged 16 years or more was selected per household, using a Kish grid (Kish, 1965). The response rate was 73.3%, resulting in a sample size of 12,992.

Field work was carried out in 2003-2004. Ethics permission was granted by all 14 regional health ethics committees and written informed consent was obtained from all participants. There was no financial recompense for participation.

Interview

Computer assisted personal interviews were carried out face-to-face using the World Mental Health Surveys CIDI 3.0 (<http://www.hcp.med.harvard.edu/wmhcdi>) with some non-diagnostic modifications

(<http://www.moh.govt.nz/moh.nsf/by+unid/3195F8D3155E1C2ACC2571FC00131A6D?Open>). Some sections were omitted to keep the interview under 90 minutes on average.

Part 1 of the interview contained core diagnoses, including depression and mania/hypomania, suicidality, treatment and socio-demographic correlates. Part 2 included additional diagnoses and assessment. Respondents who met lifetime criteria for any Part 1 diagnosis, or who reported ever having a suicide plan or attempt or hospitalization for mental health problems all went on to Part 2, as did a random sub-sample of other respondents (N=7435).

Diagnoses

All diagnoses reported here are DSM-IV diagnoses based on the CIDI 3.0.

Bipolar disorder—DSM-IV criteria were used to define mania, hypomania and major depressive episode, except that criteria for a Mixed Episode were not operationalised. A psychiatrist assessed cases of possible mania/hypomania and depression to exclude plausible organic causes. No clinical reappraisal interviews for bipolar disorder were carried out in New Zealand. Following clinical reappraisal in the US there was minor adjustment to the algorithms to improve the concordance between the CIDI diagnoses and those from clinician re-interview using the SCID (Haro et al., 2008; Kessler et al., 2006). In New Zealand this resulted in some changes of diagnosis, from Bipolar I to Bipolar II and Bipolar II to subthreshold.

Age-of-onset was the minimum of the ages reported for the first episode of mania/hypomania and the first episode of MDE. Respondents were also asked to estimate the number of years in which they had an episode of mania/hypomania and the number in which they had an episode of MDE. To avoid double counting of years with both types of episode, the maximum across both polarities was used. Lifetime persistence was defined as the number of years with an episode divided by the number of years since onset.

More detailed information on recent episodes was collected from twelve-month cases. Those who reported an episode of mania/hypomania were asked how many such episodes lasting at least four days they had in that period. Those who reported an episode of MDE were asked how many such episodes lasting at least two weeks they had in that period. They were told that an episode of depression had ended when they had two weeks symptom free. Twelve-month bipolar disorder (BPD) with frequent mood episodes (FME) was defined as at least four mood episodes, whether of mania/hypomania, MDE or a mixture of the two types of episode. Both the No-FME group (1-3 episodes in the past twelve months) and the group with lifetime BPD but no episodes in the past twelve months could have had FME at an earlier period.

For depression and separately for mania/hypomania, individuals who reported any episode in the past twelve months were asked about how long in that period they had been in an episode. The sum across both polarities was used to define twelve month persistence, namely the number of weeks in episode.

The self-report version of the Quick Inventory of Depressive Symptoms (QIDS) (Rush et al., 2003) was used to assess clinical severity for depression categorised as follows: severe (including very severe) 16+; moderate 11-15; mild 6-10; not clinically significant 0-5. Severity was for the worst period (two weeks or more) in the past twelve months. The self-report scale for the severity of mania/hypomania was removed as part of shortening the New Zealand interview so there was no assessment of this.

The Sheehan Disability Scales (Leon et al., 1997) were used for each disorder to assess role impairment for the worst month in the past twelve months for those reporting episodes or problems in that period. Respondents rated on a labelled 0-10 visual analogue scale how much

their condition interfered in that month with their home management, work, social life and personal relationships. Values reported are the maximum across the four domains. The labelling of the numbers on the scale was: 0 (none), 1-3 (mild), 4-6 (moderate), severe (7-9) and very severe (10).

Other disorders—As well as mania/hypomania and MDE the CIDI interview used in New Zealand assessed anxiety disorders and substance use disorders.

Other measures

Childhood adversities—As part of the Post-traumatic Stress Disorder and Chronic Conditions Sections in Part 2, respondents reported on four types of childhood adversities: physical abuse from parents/caregivers (“beaten up”), sexual assault or rape, witnessing family violence or chronic childhood illness (cancer, epilepsy, diabetes). Age of first occurrence was reported for each adversity experienced.

Current Socio-demographic characteristics—Six correlates were investigated: sex, age at interview (16-24, 25-44, 45-64, 65+), marital status at time of interview (married, previously married, never married), education ($\leq 10/11-12/13/14+$ years), employment status (working or self-employed, student, homemaker, retired, unemployed or disabled at time of interview and ‘other’ which mostly consisted of those unemployed or disabled at time of interview), and household income (low, low-average, high –average, and high). Pre-tax household income in the year before interview was split with three cutpoints: half the median, the median and twice the median.

Suicidality—All respondents were asked if they had ever thought seriously about committing suicide, and if so, at what age this first happened. Respondents who reported suicidal ideation were then asked if they ever made a suicide plan and if they ever made a suicide attempt, again with age of first occurrence reported for each positive response.

Treatment—All respondents were asked about treatment of problems with “emotions, nerves, mental health or use of alcohol or drugs”. Service providers were listed as psychiatrists, other mental health professionals, general medical providers, human service professionals, and complementary-alternative medical (CAM) providers (e.g. acupuncturist, chiropractor).

Statistical analysis

All data was weighted to take account of the probability of selection, adjusted for non-response, and post-stratified by age, sex and ethnicity to the New Zealand 2001 Census of Population and Dwellings. Additional weights were used for Part 2 responses to take account of the probability of selection into Part 2.

Subpopulation comparisons within the BPD cases were used to compare those with frequent mood episodes (FME) with those with twelve-month BPD without FME (No-FME), or those with lifetime but not twelve-month BPD. Comparisons were of proportions or means for prevalence, persistence, severity and treatment.

Logistic regression was used to investigate sub-types of BPD in relation to those who had not developed BPD (Hosmer and Lemeshow, 2000). Each comorbid diagnosis or socio-demographic characteristic was investigated separately, except that education was controlled for in models of household income. For comorbid diagnoses, the comorbid diagnosis was the outcome with bipolar disorder (FME/No FME/Other Lifetime/No BPD) as predictor. For current socio-demographic characteristics, the characteristic was the predictor and there were two logistic regressions, one with FME/No BPD as outcome, and one with No-FME/No BPD

as the outcome. Those with lifetime BPD but without an episode in the past twelve months were excluded from these two analyses.

The onset of suicidal behaviours subsequent to the onset of BPD was studied using discrete-time survival analysis with person-years as the unit of analysis (Willett and Singer, 1993), as used previously in studies of suicidality in the National Comorbidity Replication (NCS-R) (Nock et al., 2008). Age at interview (birth cohort), sex and all comorbidities were included in the models. The onset of BPD was studied in relation to childhood adversity also using discrete-time survival analysis, with control for age group and sex.

Because of the complex sample design of the survey, all statistical analyses were carried out in SUDAAN statistical software (<http://www.rti.org/SUDAAN/>) with Taylor series linearization for estimation of standard errors. Statistical significance tests of sets of coefficients were made using Wald χ^2 tests based on design-corrected coefficient variance-covariance matrices.

Results

Prevalence, age-of-onset and persistence

Previous reports of lifetime estimates of DSM-IV/CIDI BPD for the New Zealand Mental Health Survey (Oakley Browne, 2006; Oakley Browne et al., 2006a) have been for a broad definition of BPD which includes subthreshold BPD as well as BP-I and BP-II (Wells et al., 2006a). The estimate of lifetime prevalence for broadly defined BPD is 3.8% whereas if the definition is restricted to BP-I and BP-II, as in this paper, then the lifetime prevalence of BPD is 1.7% with prevalence of 1.0% for BP-I and 0.7% for BP-II (Table 1). When lifetime BPD cases are grouped by mood episode frequency in the past twelve months, prevalences are 0.3% with FME, 0.7% with 1-3 episodes (No-FME), and 0.7% with no episodes.

Mean age-of-onset is early for all cases with BPD, with the means in Table 2 ranging from 16.0 to 20.1 and an overall mean of 19.1 years. These means are simple descriptive weighted means. Comparison across subgroups was based on models including age and sex (and BP-I/ BP-II when analysing 'Any BPD'). Those with twelve-month FME had earlier onset of BPD (16.0 years) compared with twelve-month cases without FME (19.5 years) or those with lifetime BPD but with no episode in the past twelve month (20.1 years). Division into BP-I and BP-II showed no significant differences for BP-I and a difference of over six years for BP-II (14.7 years versus 20.9 and 22.3 years respectively).

Lifetime persistence, defined as the ratio of number of years in episode divided by number of years since first onset, was highest for those with FME (0.7), slightly lower for those with twelve-month BPD without FME (0.6), and lowest for those without an episode in the past twelve months (0.3). This pattern was seen for BP-I and BP-II but did not reach significance for comparisons of the two twelve-month groups for BP-I. Twelve-month persistence, defined as the number of weeks in episode in the past twelve months among twelve-month cases, was roughly double for the FME group compared with the non-FME group, as expected from the definition.

Childhood adversity

Each of the four childhood adversities in Table 3 is associated with the development of the three subtypes of BPD (FME/No FME/Other LT BPD), with a range of ORs from 1.2-8.9, with half of the ORs being 4.0 or more. Although for each adversity the OR is always highest for FME, none of the comparisons with the other two groups were significant except for violence in the family (FME OR=5.3, No FME OR=1.2, $p=.01$).

Lifetime comorbidity with other DSM-IV disorders

Table 4 compares the history of other disorders between the three bipolar disorder groups, defined by the number of episodes in the past twelve months, and people without bipolar disorder. Note that for the bipolar disorder groups, the age of onset of the comorbid disorder was almost always prior to current age, or even one year before that, which could have been within the twelve month period before the interview (results available on request).

Bipolar disorder has high lifetime comorbidity with other DSM-IV disorders. The percentage with any other lifetime disorder was 93.7% for FME, 78.8% for No FME (twelve month disorder), and 70.8% for those with lifetime BPD without an episode in the past twelve months (see Table 4). The percentage with three or more other disorders was 76.0%, 46.8% and 44.7% respectively. These prevalences are higher than for those people without bipolar disorder, particularly for multiple disorders: odds ratios were highest for FME (78.0) with ORs of 13.9 and 44.7 for the other two bipolar groups.

A similar pattern is shown for individual disorders. Relative to people who have not developed bipolar disorder, those with FME or No-FME (but twelve-month disorder) are much more likely to have experienced other disorders with ORs ranging from 2.6 for alcohol abuse to 14.9 for Generalised Anxiety Disorder (GAD); all ORs are highly significant. ORs were lower for the Other Lifetime BPD group without an episode in the past twelve months but still ranged from 1.7 to 5.6 and were significant for all except specific phobia (OR=1.7) and OCD (OR=2.3). Among those with twelve-month disorder, only a few comparisons between FME and No-FME were significant or even marginal: specific phobia $p=.07$, social phobia $p=.03$, any anxiety $p=.06$, alcohol abuse $p=.006$, alcohol dependence $p=.08$, any substance disorder $p=.004$. However comorbid disorder was more common for FME than for Lifetime BPD without a twelve-month episode for all disorders and this was significant for most. Similar trends were seen for BP-I and BP-II (results available on request).

Suicidality

Associations seen between BPD and subsequent or concurrent onset of lifetime suicidal ideation, plans and attempt were investigated. If the suicidal behaviour occurred earlier than the onset of BPD then that person did not contribute to the analysis. Models included all comorbidities as well as age group at interview and sex.

These associations with ideation, plans and attempt were examined for each of the three subtypes of BPD (FME/No-FME/Other LT BPD) for Any BPD and then for BP-I and BP-II, so that there were 27 ORs in total, of which 22 were significantly elevated. The range was from 1.9 to 7.0, except for the No-FME/BP-I group (OR=0.5). Individuals who develop BPD are more likely than others to go on to develop suicidal ideation, plans or attempts.

Although ORs were larger for the FME group than for the No-FME group, comparisons between these two groups were significant only for suicide ideation for Any BPD ($p=.04$) and for suicide plan among the BP-I cases ($p=.01$). All comparisons were nonsignificant when comparing the FME group and those with lifetime BPD but no mood episode in the past twelve months (Other LT BPD).

Current socio-demographic correlates

To investigate the associations between current socio-demographic correlates and twelve-month BPD, each BPD group (FME/No-FME) was compared with those without BPD. The six correlates were sex, age, marital status, education, employment status and household income (comparisons for household income also controlled for education level). For Any BPD there were trends but the only significant association was between No-FME and education,

with all three lower education levels having higher No-FME BPD (ORs of 4.1, 4.3, and 5.3, $p=.049$), which was also the only significant result seen for BP-II. For BP-I, however, ORs were larger. Relative to those without BPD, for BP-I younger people were much more likely to have twelve-month disorder without FME (No-FME) ($p<.001$), both previously married and never married people were more likely to have FME ($p=.002$) or No-FME ($p=.009$) and FME was more likely in those with lower household incomes ($p=.04$). However no comparisons of FME and No-FME were significant for Any BPD, BP-I or BP-II.

Treatment

Hospitalisation for mania or MDE at any time prior to interview was quite common and similar for BP-I and BP-II. For any BPD the percentages were: 35.4% for FME, 21.5% for No-FME and 19.2% for those with lifetime BPD but not in the past twelve months (FME versus No-FME $p=.14$; FME versus Other LT $p=.09$). These percentages were similar to those for hospitalisations for MDE (34.1%, 19.5% and 17.2%) whereas hospitalisations for mania were less common both for Any BPD (10.1%, 12.8% and 9.6%) and even for BP-I (17.2, 10.5, 9.5). Only 11 were admitted in the past year: 7.1% of FME and 5.7% of No-FME, $p=0.77$.

The majority reported having received treatment for mental health problems at some time (FME 84.8%, No-FME 85.6%, Other LT 79.9%) although lower percentages had received any treatment by mental health specialty services (64.0%, 66.0%, 50.5%) or general medical treatment (65.2%, 65.0%, 56.4%). General practitioners in New Zealand serve as the gateway to most mental health treatment, apart from psychiatric emergencies and school counselling. Treatment ever for bipolar disorder (mania/hypomania or MDE) was 77.4%, 78.3% and 64.4%, respectively across the three BPD groups ($p>.20$).

The two groups with twelve-month disorder (FME/No-FME) were equally likely (or unlikely) to seek treatment within that period. For bipolar treatment the percentages were 51.2% and 52.4%, for any contact with mental health speciality services, 36.3% and 36.6%. No information was available on the timing of treatment contact relative to episodes. It could have followed onset or onset could have occurred while someone was on prophylactic medication.

Severity and role impairment in the past twelve months

Clinical severity, role impairment and days out of role are presented in Table 5 for cases of BPD with an episode in the past twelve months. Because the interview asked separately about mania/hypomania and depression there are different numbers reporting for each of these types of episode.

The clinical severity of the worst episode of MDE in the past twelve months was assessed through the self-report version of the Quick Inventory of Depressive Symptoms (QIDS). Table 5 shows that 74.4% of those with FME and 60.5% of those with No-FME were severe or very severe while the remainder were moderate ($p=.09$). None of those who said they had an episode reported experiences classified as mild or not of clinical significance. Clinical severity for mania/hypomania was not assessed.

For role impairment from mania/hypomania, the trends across FME and No FME were in opposite directions for BP-I and BP-II. For BP-I, FME cases were more likely to be severe or very severe than No-FME cases. The reverse held for BP-II where a third of the FME group reported only mild or no role impairment, presumably because they experienced mild episodes of hypomania. However, for MDE the trend was for more severe impairment among those with FME than in those without. When the maximum impairment across mania/hypomania and depression was compared, those with FME were more likely to be severe than those without ($p\leq.001$ for Any BPD and BP-I, $p=.06$ for BP-II).

Both clinical severity and role impairment focused on the worst period in the past twelve months. The measure of days out of role provides information on the whole twelve months and supplements the results on weeks in episode presented in Table 2. On average those with FME reported nearly three months in which they could not carry out their usual role (83.7 days) whereas for the No-FME group the mean was one month (28.2 days), $p < .001$. It must be remembered that these estimates are obtained by taking the maximum reported from mania/hypomania and MDE (in order to avoid double counting mixed episodes), not by summing, so undoubtedly underestimates the total time out of role.

Discussion

This paper shows that, while people meeting criteria for bipolar disorder have experienced more childhood adversity, more comorbidity with other mental disorders and suicidality than those without bipolar disorder, this does not differ by frequency of mood episodes in the past twelve months, except for higher lifetime comorbidity with social phobia and alcohol abuse. Current socio-demographic correlates were also similar for those with or without FME. Even treatment histories were similar. However those with FME in the last twelve months had earlier onset of disorder (3-4 years), higher annual persistence since disorder onset, more time in episode in the past twelve months and more days out of role in that period, marginally more severe depression and more interference with life. In summary, these results indicate that predictors and correlates are similar in those with and without FME but that the burden of bipolar disorder is more for those with frequent episodes.

A substantial proportion of those with bipolar disorder experience frequent mood episodes. The NCS-R (Nierenberg et al., 2009) found FME to have occurred in about half of those with an episode in the past twelve months which corresponded to a third of those with lifetime diagnoses of bipolar disorder. In New Zealand the estimates were that about a third of those with twelve month disorder had FME, which was about a fifth of those with lifetime disorder. These percentages are higher than those for rapid cycling from clinical studies (Bauer et al., 2008); this may be because the definition of FME was less strict than that for rapid cycling used in clinical studies, as there was no way of confirming that full criteria were met for each episode..

Clinical studies with follow-up provide information on the stability of FME as a phenotype. For example Bauer et al (Bauer et al., 1994) showed that in the year after entry to their study 53% of their rapid cycling patients converted to non-rapid cycling while 11% of non-rapid cyclers converted to rapid cycling, with both groups being maintained on standard treatments. It has been said that, 'rapid cycling is a transient phenomenon in many patients' (Bauer et al., 2008). Such temporal instability reduces the detection of predictors of rapid cycling when bipolar groups are compared on the basis of twelve month criteria, as the No-FME group and the Other Lifetime BPD groups may contain people who have experienced frequent mood episodes, just not in the previous twelve months. In addition all recent clinical studies are of treated patients and though treatment is less common in community samples, the majority of bipolar cases in this community sample have had some treatment.

There are a number of other limitations of this study, although some arise from its strengths. It is only possible to investigate bipolar disorders in the community by means of large scale surveys but even with a sample size of nearly 13,000 the number of bipolar cases with and without FME is not large and is, of course, even smaller if broken down into Bipolar I and Bipolar II. However the size of such a survey makes it possible to make quite precise comparisons with people who have not developed bipolar disorder. Another disadvantage of a cross-sectional survey is that it relies on recall which, even for the past year, may not always be accurate. The detail in some clinical studies with follow-up is not available here (Coryell

et al., 2003; Kupka et al., 2003; Kupka et al., 2005). As Judd *et al.* (Judd et al., 2008) emphasise, residual symptoms are not uncommon and this poses a problem for respondents who are asked about the number of episodes they have experienced. Does depression which improves and then worsens count as two episodes or one? Respondents were told that a depressive episode ended when they had two weeks with no symptoms. Therefore, some people with very rapid polarity shifts may have counted periods with switches from depression to mania/hypomania and back again as part of one episode, and thus not met criteria for FME although they would have met the older criterion for rapid cycling based on switches of polarity (Bauer et al., 2008; Judd et al., 2003).

These two community surveys, the NCS-R and the NZMHS, both show that CIDI 3.0 diagnosed community cases of bipolar disorder with mood episodes in the past twelve months, report considerable impairment with life and clinical severity. Furthermore they show that, while bipolar disorder is distinguished from major depressive disorder by the presence of mania or hypomania, the role impairment reported arises more from depression than from mania/hypomania and that treatment is also more likely for depression. In part this may be because the negative aspects of mania and hypomania are not fully recognized or the episodes may even be experienced as positive. Furthermore hypomania can be productive. Clinical follow-up studies also indicate that the role impairment of depressive episodes for both Bipolar-I and Bipolar-II (Azorin et al., 2008; Judd et al., 2003; Judd et al., 2002) seems greater than that of manic/hypomanic episodes. Those experiencing rapid cycling or at least frequent mood episodes have their lives more disrupted even more than those with fewer episodes. As only about half of those with recent disorder report treatment for depression or mania/hypomania it seems that efforts to encourage access to treatment and maintenance of treatment could do much to ameliorate the course of disorder.

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Table 1

Twelve-month and lifetime (LT) prevalence of DSM-IV/CIDI bipolar disorder (BPD) with and without frequent mood episodes (FME) in the past twelve months (N=12,992)

	Twelve-month BPD		Other LT BPD^I % (se)	Any LT BPD % (se)
	FME % (se)	No FME % (se)		
Any BPD	0.3 (0.1)	0.7 (0.1)	0.7 (0.1)	1.7 (0.1)
BP-I	0.2 (<0.1)	0.4 (0.1)	0.4 (0.1)	1.0 (0.1)
BP-II	0.2 (<0.1)	0.3 (0.1)	0.3 (0.1)	0.7 (0.1)

^I The FME classification applied only to the past twelve months. Therefore only BPD cases who reported at least one episode in the last twelve months could be classified as FME or not. Lifetime cases without an episode in the last twelve months could not be classified in relation to FME.

Table 2
Age-of-onset and course of DSM-IV/CIDI bipolar disorder (BPD) with and without frequent mood episodes (FME)

	Twelve-month BPD				Twelve-month FME versus			
	FME		No FME		Any LT BPD		Other twelve-month BPD (No FME) ²	
	Mean (se)	(n)	Mean (se)	(n)	Mean (se)	χ^2 (1)	p	Other LT BPD ²
1. Any BPD								
Age of onset ³	16.0 (1.3)	(67)	19.5 (1.0)	(120)	19.1 (0.7)	5.4	.02	4.3 .04
LT persistence ⁴	0.7 (<0.1)		0.6 (<0.1)		0.5 (<0.1)	6.9	.009	74.6 <.001
12-month persistence ⁵	29.6 (3.8)		13.1 (2.1)		18.7 (2.1)	20.1	<.001	- -
(n)		(67)		(120)				
2. BP-I								
Age of onset ³	17.2 (2.1)	(38)	18.6 (1.3)	(74)	18.3 (0.7)	0.2	.62	0.1 .74
LT persistence ⁴	0.7 (<0.1)		0.6 (<0.1)		0.5 (<0.1)	0.6	.43	37.6 <.001
12-month persistence ⁵	29.3 (6.3)		11.0 (2.6)		16.7 2.8	13.2	<.001	- -
(n)		(38)		(74)				
3. BP-II								
Age of onset ³	14.7 (1.3)	(29)	20.9 (1.7)	(46)	20.1 (1.2)	8.4	.004	9.7 .002
LT persistence ⁴	0.7 (<0.1)		0.5 (0.1)		0.5 (<0.1)	10.3	.001	30.7 <.001
12-month persistence ⁵	29.9 3.6		16.7 (3.6)		21.4 (2.9)	7.2	.007	--
(n)		(29)		(46)				

¹ FME is defined only for 12-month cases. Lifetime cases without an episode in the past 12 months are not classified in terms of FME

² Comparisons come from models which include age (16-24/25-44/45-64/65+) and sex. For 'Any BPD' the models also include BP-I/BP-II

³ Age-of-onset is defined as the earlier of the onsets of mania/hypomania and MDE

⁴ Lifetime persistence is defined as the ratio of number of years in episode divided by number of years since first onset

⁵ Twelve-month persistence is defined as the number of weeks in episode in the past twelve months among twelve-month cases (maximum 52 weeks)

⁶ 12-month persistence is calculated only for cases with at least one episode in the past twelve-months so sample size is 187 for Any BPD, 112 for BP-I and 75 for BP-II

Childhood adversities and the risk of DSM-IV/CIDI bipolar disorder (BP-I/II) with and without frequent mood episodes (FME)¹

Table 3

	Twelve-month BPD			Twelve-month FME versus			
	FME		No FME	Other twelve-month BPD (No FME)		Other LT BPD	
	OR (95% CI)		OR (95% CI)	OR (95% CI)	χ^2 (1)	p	χ^2 (1)
Physical abuse ²	8.9 (3.4, 23.2)		4.0 (1.7, 9.6)	3.2 (1.4, 7.8)	1.6	.20	2.7
Sexual abuse ²	6.5 (2.7, 15.7)		5.6 (2.4, 13.1)	5.4 (2.1, 14.0)	0.4	.53	0.4
Violence in family	5.3 (2.2, 13.0)		1.2 (0.5, 2.9)	3.4 (1.4, 8.4)	6.5	.01	0.7
Severe physical illness ²	3.9 (1.1, 13.9)		2.7 (0.6, 12.5)	3.0 (0.9, 9.6)	0.1	.81	0.1
(n)	(7192)		(7245)	(7248)			

¹ Based on multivariate analysis using discrete-time survival models with person-year as the unit of analysis, including in the model year of life, age at interview, sex, Bipolar I/II, and the number of adversities experienced up to that year of life. Each Bipolar Disorder subgroup was compared with those who had never met criteria for Bipolar Disorder, hence the different sample sizes for calculation of odds ratios for each subgroup. Onset is defined as the first episode of mania/hypomania or MDE in respondents classified into three subgroups.

² Adversity experienced by the respondent

Table 4

Lifetime comorbidity of DSM-IV/CIDI bipolar disorder (BPD) with and without frequent mood episodes (FME) with other DSM-IV/CIDI disorders¹

	Twelve-month BPD						Twelve-month FME versus					
	FME			No FME			Other LT BPD ¹			Other twelve-month BPD (No FME)		
	%	OR	(95% CI)	%	OR	(95% CI)	%	OR	(95% CI)	χ^2 (1)	p	χ^2 (1)
1. Anxiety disorder												
GAD	48.7	14.9	7.2, 30.5	38.7	9.5	4.4, 20.3	28.0	5.6	2.8, 11.5	1.2	.28	5.4
Agoraphobia	7.1	7.4	2.6, 20.9	7.2	7.8	2.5, 24.9	4.6	5.2	2.0, 13.2	0.0	.92	0.3
Specific phobia	55.4	8.4	4.3, 16.5	38.8	4.0	2.2, 7.3	20.5	1.7	0.8, 3.4	3.2	.07	14.1
Social phobia	57.3	9.5	4.4, 20.2	36.4	3.9	1.9, 7.9	29.4	2.9	1.4, 5.6	4.7	.03	8.6
PTSD ²	34.1	7.0	3.2, 15.3	36.4	7.2	3.6, 14.2	24.1	4.0	2.0, 8.2	0.0	.96	1.5
OCD ²	17.4	12.7	4.1, 38.9	10.1	6.7	2.5, 17.9	3.5	2.3	0.7, 7.2	1.2	.27	7.0
Panic disorder	26.2	9.1	3.7, 22.0	18.7	5.5	2.6, 11.8	11.6	3.3	1.2, 8.8	0.8	.36	2.6
Panic attack	77.9	8.9	3.5, 22.2	69.4	5.5	3.0, 10.1	61.5	4.0	2.2, 7.4	1.0	.32	3.1
Any anxiety disorder ²	85.8	14.4	4.9, 42.7	68.3	4.9	2.7, 9.0	61.7	3.7	2.0, 7.2	3.7	.06	6.3
2. Substance disorders												
Alcohol abuse	60.3	7.8	3.8, 16.1	35.6	2.6	1.4, 4.8	41.7	3.3	1.7, 6.5	7.4	.006	4.0
Alcohol dependence	39.0	8.4	3.6, 19.8	22.6	3.7	1.8, 7.7	27.2	4.8	2.1, 11.3	3.0	.08	1.2
Drug abuse	33.0	5.2	2.2, 12.0	31.1	5.0	2.4, 10.2	21.9	3.2	1.7, 6.0	0.0	.93	1.3
Drug Dependence	24.7	5.9	2.1, 16.6	21.5	4.7	2.0, 11.1	15.3	3.3	1.4, 7.9	0.2	.67	1.3
Any substance use disorder	66.0	9.4	4.5, 19.6	38.8	2.8	1.4, 5.3	42.6	3.2	1.7, 6.2	8.5	.004	7.2
3. Any comorbid disorder												
Any comorbid disorder ²	93.7	22.5	3.8, 132.8	78.8	5.5	2.9, 10.5	70.8	3.6	1.8, 7.4	2.5	.12	4.5
Exactly one disorder ²	6.7	3.9	0.7, 20.9	14.4	2.0	0.6, 6.3	14.6	1.5	0.5, 4.2	0.5	.47	1.1
Exactly two disorders ²	11.0	9.1	1.5, 56.8	17.6	3.5	1.2, 10.8	11.6	1.6	0.6, 3.8	0.9	.35	3.6
Three or more ³ disorders	76.0	78.0	12.4, 491.5	46.8	13.9	6.8, 28.4	44.7	10.0	4.6, 21.7	3.6	.06	5.4

¹ The models included a dummy variable for each type of BPD (FME/No FME/Other LT to contrast with those without any BPD), Bipolar I/II, age at interview and sex as predictors of each comorbid disorder. A separate model was used for each comorbid disorder. However, for the number of comorbid disorders three separate analyses on the relevant subsamples were used to predict exactly one versus none, exactly two versus none and three or more versus none. The percentages reported are the simple descriptive percentages with each comorbid disorder. N=12,992 except for disorders assessed in Part 2 for which N=7345.

² Disorder assessed in Part 2 so N=7345.

Clinical severity¹ and role impairment² for twelve-month DSM-IV/CIDI bipolar disorder (BPD) with or without frequent mood episodes (FME)

Any Bipolar										Bipolar I					Bipolar II				
FME		No FME		Comparison ³		FME		No FME		Comparison ³		FME		No FME		Comparison ³			
%	se	%	se	%	se	%	se	%	se	%	se	%	se	%	se	%	se		
Clinical severity of MDE – QIDS ¹																			
Severe/Very severe	74.4	(8.6)	60.5	(9.3)	2.9	.09	75.8	(12.4)	70.3	(13.9)	2.4	.12	73.1	(11.6)	55.2	(12.6)	0.2	.62	
Moderate	25.6	(8.6)	39.5	(9.3)			24.2	(12.4)	29.7	(13.9)			26.9	(11.6)	44.8	(12.6)			
Mild/None	0.0		0.0				0.0		0.0				0.0						
(n)	(57)		(62)				(28)		(27)				(29)		(35)				
Role impairment - Sheehan Scales ²																			
Mania/Hypomania																			
Severe/Very severe	66.7	(8.1)	65.1	(7.4)	0.1	.82	84.9	(5.1)	62.4	(9.1)	3.9	.05	41.3	(12.4)	70.9	(11.3)	2.7	.10	
Moderate	15.5	(5.1)	25.1	(6.5)			8.2	(4.2)	25.7	(7.9)			25.7	(10.3)	23.7	(10.0)			
Mild	7.5	(4.0)	7.2	(4.0)			5.9	(4.0)	10.6	(5.8)			9.7	(7.7)	0.0	-			
None	10.3	(6.6)	2.7	(1.9)			1.0	(0.9)	1.4	(1.2)			23.3	(13.8)	5.4	(5.6)			
(n)	(58)		(84)				(34)		(58)				(23)		(24)				
MDE																			
Severe/Very severe	88.8	(4.4)	70.3	(9.2)	3.3	.07	96.6	(2.2)	77.1	(10.6)	--	--	81.2	(8.5)	66.7	(12.2)	0.9	.34	
Moderate	10.5	(4.3)	27.9	(9.2)			2.1	(1.6)	21.2	(10.5)			18.1	(8.5)	31.6	(12.3)			
Mild	0.7	(0.7)	1.4	(1.0)			1.4	(1.4)	1.7	(1.7)			0.0	-	1.2	(1.2)			
None	0.0	-	0.4	(0.4)			0.0	-	0.0	-			0.0	-	0.6	(0.6)			
(n)	(57)		(62)				(28)		(27)				(29)		(35)				
Mania/hypomania or MDE																			
Severe/Very severe	92.5	(3.0)	66.0	(6.5)	14.5	<.001	94.1	(2.6)	64.5	(8.0)	11.4	.001	90.7	(5.8)	68.2	(10.4)	3.6	.06	
Moderate	7.0	(3.0)	26.8	(6.1)			5.1	(2.4)	25.8	(7.2)			9.3	(5.8)	28.3	(10.2)			
Mild	0.0	-	5.6	(3.0)			0.0	-	9.5	(5.0)			0.0	-	0.0	-			
None	0.4	(0.4)	1.6	(1.3)			0.8	(0.8)	0.2	(0.2)			0.0	-	3.6	(3.3)			
(n)	(67)		(118)				(38)		(73)				(29)		(45)				
Days out role in the past 12 months ⁴																			
	Mean	se	Mean	se			Mean	se	Mean	se			Mean	se	Mean	se			

Days out role in the past 12 months⁴

	Any Bipolar						Bipolar I						Bipolar II					
	FME		No FME		Comparison ³		FME		No FME		Comparison ³		FME		No FME		Comparison ³	
	%	se	%	se	χ^2	p	%	se	%	se	χ^2	p	%	se	%	se	χ^2	p
Mania	43.2	13.6	23.7	8.2	3.5	.06	56.5	22.3	25.6	11.8	4.1	.04	24.8	13.5	19.6	8.4	0.1	.78
Depression	80.0	15.0	44.0	12.9	3.3	.07	105.8	23.8	81.7	30.4	2.6	.11	53.6	18.5	23.8	8.1	1.8	.18
Max. of either	83.7	14.9	28.1	7.0	17.3	<.001	99.0	21.8	31.3	10.9	13.8	<.001	65.9	21.1	23.6	7.4	3.7	.06

¹For the most severe period in the past twelve months

²For the worst month in the past twelve months

³Wald chi-square and p for comparison of FME and Other for Severe/Very Severe versus all other categories combined. For clinical severity the model included age (16-24/25-44/45-64/65+), sex, and for 'Any Bipolar, BP-I or BP-II. However all percentages quoted are observed percentages not model based estimates.

⁴Sample sizes as above except for differences of +/- 1 or 2 observations due to missing item response