

1

Epidemiology of bipolar disorders

1.1 CONTRIBUTION OF EPIDEMIOLOGICAL STUDIES TO THE DIAGNOSIS

The variability in the diagnoses of mental illnesses was remarkably well demonstrated around 30 years ago by a diagnostic study called the 'United States/United Kingdom Diagnostic Project' (Cooper *et al.*, 1972). This study showed that, on average, psychiatric patients hospitalized in New York were diagnosed with schizophrenia twice as often as patients hospitalized in London – and with alcoholism six times as often. On the other hand, patients in London were diagnosed with mania twelve times more often – and with psychotic depression five times more often – than patients in New York. These results certainly contributed to the realization among researchers and clinicians of the need for common diagnostic criteria to be available. Among the numerous reasons that may explain the inconsistencies in the epidemiological data, two of the most important are an imprecise diagnostic definition and diagnostic thresholds that vary between different studies (Wing *et al.*, 1978; Boyd and Weissman, 1981).

Whatever the precision of the employed criteria, formulating a cross-sectional diagnosis in the absence of longitudinal data remains difficult. A comparison of the results of the New Haven study (Weissman and Myers, 1978) with those of the Iowa 500 study (Winokur, 1975) yields a clear demonstration of this difficulty, with the first study indicating a lifetime prevalence rate for depression and mania of 28% and the second study a rate of only 8%. A large proportion of these differences stems from the fact that the New Haven study employed the RDC research criteria (Research Diagnostic Criteria (Spitzer *et al.*, 1978)), which require the presence of symptoms for at least two weeks, whereas the Iowa study used the Feighner criteria (1972), which require their presence for at least one month. Moreover, the New Haven study included secondary depression, in contrast with the Iowa study.

In order to reduce this variability as much as possible, several diagnostic classification systems were developed over the course of the 1970s, such as the Feighner criteria (1972), the Schedule for Affective Disorders and Schizophrenia (SADS) (Spitzer and Endicott, 1978) that relies on the RDC, and the Present State Examination (Wing *et al.*, 1974). In the following years, diagnostic instruments were developed corresponding to the criteria of the DSM-III (American Psychiatric Association, 1980), such as the Diagnostic Interview Schedule (DIS) (Robins *et al.*, 1981) and, more recently, the Structured Clinical Assessment for Neuropsychiatric Disorders (SCAN) (Wing *et al.*, 1990), the Structured Clinical Interview (SCID) (Spitzer *et al.*, 1990) corresponding to the criteria of the DSM-III-R (American Psychiatric

Association, 1987), or the Diagnostic Instrument for Genetic Studies (DIGS) (Nurnberger *et al.*, 1994).

One of the main problems of epidemiology lies in the precise definition of what is considered to be a ‘case’, and any comparison of historical data is confronted with the constant evolution of the definition of a disorder over the course of time. As an example, the ‘circular insanity’ suggested by Falret (1854) only partially covers the definition given by Kraepelin (1921) which includes all types of serious, periodically recurring, affective illnesses. We know that Kraepelin’s definition led to an overestimation of the prevalence of bipolar (BP) disorders, because he grouped other periodic affective disorders under this category. Nevertheless, when compared with current definitions that include BP type II disorders (hypomania and depression), Kraepelin’s criteria tend to underestimate the prevalence of these disorders.

1.2 THE DEFINITION OF BIPOLAR DISORDER

The criteria of the diagnostic and statistical manual of mental disorders (American Psychiatric Association, 1994) indicates that the essential characteristic of mood disorders is a disturbance of mood defined as a ‘prolonged emotion that colors the whole psychic life’. Although an elevated mood can be considered as a characteristic of a manic episode, the frequent presence of irritability must be included as well. Manic patients generally suffer from an inflated self-esteem, ranging from an unusual self-confidence to delusional grandiosity. A diminished need for sleep is often associated with hyperactivity, as the subjects feel full of energy and can stay awake all night concocting projects and disturbing neighbours or family with telephone calls and other intrusive interactions. Speech is accelerated and difficult to interrupt and flight of ideas is generally present as well as other symptoms such as sexual hyperactivity or impulsiveness. The disorder can be sufficiently serious to bring about a marked disability in social life, professional activities or interpersonal relationships, sometimes requiring hospitalization.

1.3 DEMOGRAPHIC AND SOCIAL VARIABLES

1.3.1 Gender

Most studies do not show any differences linked to gender, and the Amish study and the ECA study (see Sections 1.4.1 and 1.4.2 below) among others show a one-to-one male–female ratio (Kessler *et al.*, 1994; ten Have *et al.*, 2002). BP type II disorder appears to be more common in women and about 80% of rapid cycling patients are women (Arnold, 2003; Burt and Rasgon, 2004).

1.3.2 Age

Unlike unipolar depression, the age of onset of bipolar disorders is most common in the adolescent to young adult years. The peak age at onset of the first symptoms of BP disorder is between 15 and 19 (Costello *et al.*, 2002; Kupfer *et al.*, 2002). According to the results of a survey by the Depression and Bipolar Support Alliance (DBSA, previously NDMDA) up to 59% of patients with BP disorder had signs of the illness prior to the age of 20 (Lish *et al.*, 1994). Although pre-pubertal onset of BP disorder is rare, an American community

base school survey reported a lifetime prevalence rate of BP types I and II among adolescents aged between 14 and 18 years of 1.4% (Lewinsohn *et al.*, 2003). An ongoing survey (Coby: Cause and Outcome of Bipolar illness in Youth) (Birmaher *et al.*, 2006) indicates that approximately 70% of subjects with BP disorder recovered from their index episode and 50% had at least one syndromal recurrence, particularly a depressive episode with a median of 61 weeks after recovery of the index episode.

Instead of the traditional early and late onset groups of BP disorder, recent findings indicate that there are three age-at-onset groups: early, intermediate and late. The greatest peak is at around age 17, a smaller peak is around 25 and the smallest peak is at around 40 years of age (Bellivier *et al.*, 2003; Leboyer *et al.*, 2005). Age at onset identifies homogenous subgroups of BP disorder patients. Another independent study (Lin *et al.*, 2006) using data from the NIMH genetic initiative for BP disorder is largely consistent with those results.

At the opposite age range, elderly patients can also have symptoms of BP disorder. Onset of mania after age 60 is less likely to be associated with a family history of BP disorder and more likely secondary to medical causes, endocrine, infectious and inflammatory disorders (McDonald and Nemeroff, 1996). A recent report indicates that 6.1% of adults aged 60 and older with BP disorder appear to have illness of relatively recent onset (Sajatovic *et al.*, 2005).

1.3.3 Urban and rural

The ECA study (Weissman *et al.*, 1991) indicates that the rate in urban populations is 1.5% as compared with 0.5% for rural zones, and similar differences have also been found in other studies (Blazer *et al.*, 1985; Goodwin and Jamison, 1990). Rihmer and Angst (2005) note that although this distinction provides little information about the real living and social conditions in general, 'it can be a good marker for the density of population reflecting indirectly the amount and the nature of psychosocial stressors'.

1.3.4 Social-economic factors

Most of the studies published before 1980 indicated a higher prevalence in the more privileged social and economic classes (Verdoux and Bourgeois, 1995), but this finding has not been confirmed by more recent studies (Abood *et al.*, 2002). What is certain is that the relationships between social economic factors and mood disorders are extremely complex and multidimensional.

1.3.5 Marital status

The ECA study showed that individuals who had divorced or never been married suffered from BP disorders more frequently than those who were married.

1.3.6 Cultural factors

Since Kraepelin's time, we've known that the prevalence rates of BP disorders are often higher in certain cultures than in others, particularly in certain population groups living in

Indonesia or among the Hutterites in North America (Dohrenwend and Dohrenwend, 1974). Several studies emphasize the role that emigration may play as a risk factor in the emergence of BP disorders. However, this last point requires a more thorough analysis as it seems difficult to ascertain if BP disorders predispose subjects to emigrate or if the emigration in itself is a precipitating factor (Tohen and Goodwin, 1995).

Parallel with the development of these instruments of evaluation and the refining of the diagnostic criteria, over the last 30 years two periods can be distinguished that have marked epidemiological studies of BP disorders:

- The first period lasts from the 1970s until the mid-1990s. This period is characterized by systematic recourse to structured interviews and precisely defined criteria as well as by a choice to abide by the categories of BP I and II disorders, as they are defined in Appendix 1 on diagnostic criteria. This trend can explain the relatively low prevalence rates of this period.
- The second period, which began several years ago, is characterized by a loosening of the inclusion criteria and by the recognition of disorders whose severity does not attain the classically defined threshold.

1.4 A FEW IMPORTANT HISTORICAL EPIDEMIOLOGICAL STUDIES

1.4.1 Amish study

This study (Egeland and Hostetter, 1983) examined affective disorders among the Amish community, a Protestant population that has remained culturally isolated and genetically homogenous. The old order Amish were represented by a population of 12,500 people who live for the most part in the county of Lancaster, Pennsylvania, USA. Their genealogical tree and medical files date back for 30 generations. This study followed individuals with affective disorders over a period of six years. It was carried out in a population that is rarely confronted with criminal acts and is free from alcohol or drug dependence. The prevalence of BP type I and II disorders in the population aged 15 years or older was 0.46%.

1.4.2 Epidemiologic Catchment Area (ECA) study

The ECA study gathered data on BP disorders according to the DSM-III criteria by means of the DIS diagnostic interview (Robins *et al.*, 1981), allowing for the calculation of prevalence rates for BP I and II disorders, but not for cyclothymic disorders. The lifetime prevalence rate of the manic episode was 0.8% (Robins *et al.*, 1984), with no differences between gender or ethnic groups. The rate of BP II disorder was 0.5%, likewise with no differences between gender and ethnic groups. It is noteworthy, however, that the prevalence rates vary noticeably among the five study sites. For example, for BP I disorder, the rate varied between 0.6% in Baltimore and 3.4% in Durham. The average age of onset was 21 years (Weissman *et al.*, 1988).

1.4.3 New Haven study

Weissman and Myers (1978) published the first epidemiological study carried out by means of diagnostic research criteria, the Schedule for Affective Disorders and Schizophrenia and the Research Diagnostic Criteria (SADS-RDC) (Spitzer *et al.*, 1978). This study indicates a lifetime prevalence rate of 0.6% for BP I disorder and of 0.6% for BP II disorder, with significantly higher prevalence rates, up to 4.6%, in groups with more elevated social and economic status.

1.4.4 National Comorbidity Survey (NCS)

This study (Kessler *et al.*, 1994), which surveyed a national sample of the non-institutionalized population of the United States, aged between 15 and 54, was carried out with the Composite International Diagnostic Instrument (CIDI) (Robins *et al.*, 1988) developed by the University of Michigan. 8,098 individuals were included in the survey and the methodology was designed with the experience of the ECA study in mind, thus special attention was paid to risk factors and comorbidity issues. The study reported a lifetime prevalence rate of 1.6% for BP disorder and of only 0.6% for non-affective psychoses (schizophrenia, schizophreniform disorder, schizoaffective disorder, delusional disorder and psychotic disorder not otherwise specified). This rate, which is particularly low for the non-affective psychoses in comparison with preceding studies, can be partially explained by the methodology employed, which included a reevaluation of each case by means of the clinical interview using the SCID.

1.5 OTHER STUDIES CARRIED OUT WITHIN THE GENERAL POPULATION

The Florence study (Faravelli *et al.*, 1990) reported a one year prevalence rate of 1.4% in women and 0.65% in men for BP I disorder and a prevalence of 0.2% for BP II disorder regardless of gender.

The Dutch NEMESIS study (ten Have *et al.*, 2002), using the CIDI, indicated a prevalence of 1.9%. These results issue from a study aimed at gaining a better understanding of the prevalence of mental disorders as well as their consequences and the use of health systems. For example, the study revealed that more than a quarter of BP patients did not have any access to care of any type.

A study carried out in Taiwan (Hwu *et al.*, 1989) by means of the DIS reported a prevalence varying between 1.6% in the city of Taipeh and 0.7% in rural zones.

A study carried out in Alberta, Canada (Bland *et al.*, 1988), also by means of the DIS, indicated a lifetime prevalence rate of 0.7% in men and 0.4% in women for BP I disorder.

A recent screening for BP disorder in a US community (Hirschfeld *et al.*, 2003) was carried out to estimate the rates of BP I and II disorders in the general population. The study used the Mood Disorder Questionnaire (MDQ) mailed to the heads of 100,000 demographically representative households, with a supplemental mailing to 27,800 individuals selected to make the combined sample more representative for matching adults (18 years of age or older) from the US population, according to the 2000 US census data. The response rate was 66.8%.

When adjusted for non-response bias, the rate of positive screens for BP I and II disorders was 3.7%, an estimated prevalence that the study's authors consider conservative.

1.5.1 Studies extending the boundaries of bipolar disorder

The DSM-IV (American Psychiatric Association, 1994) and the ICD-10 (World Health Organization, 1993) define mania and hypomania as the presence of a certain number of symptoms that are present for a defined duration. The diagnosis of mania requires a duration of at least one week whereas at least four days are required for hypomania. This minimum threshold of four days would not account for more than half of the patients who suffer from brief hypomania, that is to say, an episode that lasts between one and three days.

Akiskal (2000) directed numerous studies that led to a reevaluation of the classically accepted prevalence rates and a redefinition of the limits of BP disorders by including mixed states of the BP disorder spectrum, including 'soft' bipolar forms (see Chapter 2).

Angst (1995) produced a review citing 13 studies that all report a lifetime prevalence rate of BP disorder below 1% in the general population, whereas two large American studies, the ECA study (Weissman *et al.*, 1991) and the National Comorbidity Survey (NCS) (Kessler *et al.*, 1994), indicate that the prevalence rate is between 1.2 and 1.6%. Angst (1995) contests these figures, considering them to be too low due to methodological errors. The article primarily criticizes these studies for not taking into account the fact that mania and hypomania are widely under-diagnosed because the subjects often tend to feel better than the average person in the general population. As a result they do not report their suffering and play down the possible social consequences of their disorder. With this observation as foundation, the article defends the idea that epidemiological studies cannot neglect the essential source of information provided by collateral informants in order to better detect certain behavioural modifications. In addition, the article questions the practice of resorting to non-specialized interviewers, which takes place in the majority of studies carried out by means of the DIS, and lists several American and European studies that report significantly higher prevalence rates, ranging from 3 to 6.5%. These latter studies include not only mania, but also atypical BP disorders such as hypomania and cyclothymia, thus widening the BP disorder spectrum accordingly, in comparison with the prevalence rates defined by the DSM.

In the Zurich study (Angst, 1995), the lifetime prevalence rate was 5.5% for mania and hypomania and 2.2% for brief hypomania (lasting between one and three days), thus yielding a total prevalence rate reaching 7.7%. This study was based on the examination of a cohort of 591 subjects aged between 10 and 20 years and followed over four evaluations until the age of 35. A certain percentage of patients presenting with brief hypomanic, and recurring mood changes associated with episodes of depression, must be added to the rate obtained. Angst hypothesizes that the symptoms of this group would largely overlap with those of cyclothymia and that it must be included in the spectrum of BP disorders. The most recent analysis of the Zurich study (Angst *et al.*, 2003) also takes into account the inclusion of groups defined as 'soft categories' of BP disorder. The study indicates a total lifetime prevalence rate for the entire BP disorder spectrum as high as 24% (0.55% for BP I, 11% for BP II including hard and soft criteria, 9.4% for minor BP disorders and 3.3% for pure hypomania, see Chapter 2 on classification).

Confronted with such high prevalence rates in comparison with the majority of previous studies, the question necessarily arises of whether certain cases that were classified as belonging to the BP disorder spectrum were not diagnosed in an excessive fashion, which would

reduce accordingly the clinical validity of this diagnosis. This possibility cannot be ignored, but these proposals are founded on ‘modern’ practices of epidemiology, which are not limited to the definition of a diagnosis, but also take into account the social consequences, a large amount of data concerning the evolution of treatment and, a new and essential aspect, the quality of life. The attention paid to quality of life makes it possible to show that subjects suffering from mania or hypomania tend to evaluate their quality of life negatively (for example, see Vojta *et al.*, 2001).

In conclusion, certain recent criteria of the BP disorder spectrum, such as the duration of the presence of the symptoms, the consideration of quality of life and the information provided by collateral informants, have led to a reevaluation of the lifetime prevalence rate of BP disorders, which would be between 3 and 6.5% (Kessler *et al.*, 2003).

1.6 KEY POINTS

- When we consider the BP disorder spectrum, numerous experts now evaluate the lifetime prevalence to be at least 3% of the general population.
- The diagnostic criteria that are currently used to define the duration of hypomania are quite probably too restrictive and do not account for brief hypomanic episodes lasting fewer than four days.
- The information provided by collateral informants can be extremely valuable in the formulation of the diagnosis, notably for BP II disorder.

REFERENCES

- Aboud Z, Sharkey A, Webb M, Kelly A, Gill M (2002). Are patients with bipolar affective disorder socially disadvantaged? A comparison with a control group. *Bipolar Disord*, 4: 243–248.
- Akiskal HS, Bourgeois ML, Angst J, Post R, Moller H, Hirschfeld R (2000). Re-evaluating the prevalence of and diagnostic composition within the broad clinical spectrum of bipolar disorders. *J Affect Disord*, 59 Suppl 1: S5–S30.
- American Psychiatric Association (ed) (1980). *Diagnostic and statistical manual of mental disorders: DSM-III*. 3rd ed. Washington, DC: American Psychiatric Association.
- American Psychiatric Association (ed) (1987). *Diagnostic and statistical manual of mental disorders: DSM-III-R*. 3rd ed. rev. Washington, DC: American Psychiatric Association.
- American Psychiatric Association (ed) (1994). *Diagnostic and statistical manual of mental disorders: DSM-IV*. 4th ed. Washington, DC: American Psychiatric Association.
- Angst J (1995). Epidémiologie du spectre bipolaire. *Encephale*, 21 Spec No 6: 37–42.
- Angst J, Gamma A, Benazzi F, Ajdacic V, Eich D, Rossler W (2003). Toward a re-definition of sub-threshold bipolarity: epidemiology and proposed criteria for bipolar-II, minor bipolar disorders and hypomania. *J Affect Disord*, 73: 133–146.
- Arnold LM (2003). Gender differences in bipolar disorder. *Psychiatr Clin North Am*, 26: 595–620.
- Bellivier F, Golmard JL, Rietschel M, Schulze TG, Malafosse A, Preisig M, McKeon P, Mynett-Johnson L, Henry C, Leboyer M (2003). Age at onset in bipolar I affective disorder: further evidence for three subgroups. *Am J Psychiatry*, 160: 999–1001.
- Birmaher B, Axelson D, Strober M, Gill MK, Valeri S, Chiappetta L, Ryan N, Leonard H, Hunt J, Iyengar S, Keller M (2006). Clinical course of children and adolescents with bipolar spectrum disorders. *Arch Gen Psychiatry*, 63: 175–183.

- Bland R, Newman S, Orn H (1988). Period prevalence of psychiatric disorders in Edmonton. *Acta Psychiatr Scand Suppl*, 338: 33–42.
- Blazer D, George LK, Landerman R, Pennybacker M, Melville ML, Woodbury M, Manton KG, Jordan K, Locke B (1985). Psychiatric disorders. A rural/urban comparison. *Arch Gen Psychiatry*, 42: 651–656.
- Boyd J, Weissman M (1981). Epidemiology of affective disorders. A reexamination and future directions. *Arch Gen Psychiatry*, 38: 1039–1046.
- Burt VK, Rasgon N (2004). Special considerations in treating bipolar disorder in women. *Bipolar Disord*, 6: 2–13.
- Cooper JE, Kendell RE, Gurland BJ, Sharpe L, Copeland JRM, Simon R (1972). *Psychiatric diagnosis in New York and London*. London: Oxford University Press.
- Costello EJ, Pine DS, Hammen C, March JS, Plotsky PM, Weissman MM, Biederman J, Goldsmith HH, Kaufman J, Lewinsohn PM, Hellander M, Hoagwood K, Koretz DS, Nelson CA, Leckman JF (2002). Development and natural history of mood disorders. *Biol Psychiatry*, 52: 529–542.
- Dohrenwend BP, Dohrenwend BS (1974). Social and cultural influences on psychopathology. *Annu Rev Psychol*, 25: 417–452.
- Egeland J, Hostetter A (1983). Amish Study, I: Affective disorders among the Amish, 1976–1980. *Am J Psychiatry*, 140: 56–61.
- Falret J-P (1854). Mémoire sur la folie circulaire, forme de maladie mentale caractérisée par la reproduction successive et régulière de l'état maniaque, de l'état mélancolique, et d'un intervalle lucide plus ou moins prolongé. *Bull Acad Natl Med*, 19: 382–415.
- Faravelli C, Guerrini DIB, Aiazzi L, Incerpi G, Pallanti S (1990). Epidemiology of mood disorders: a community survey in Florence. *J Affect Disord*, 20: 135–141.
- Feighner JP, Robins E, Guze SB, Woodruff RA, Jr., Winokur G, Munoz R (1972). Diagnostic criteria for use in psychiatric research. *Arch Gen Psychiatry*, 26: 57–63.
- Goodwin FK, Jamison KR (1990). *Manic-depressive illness*. New York: Oxford University Press.
- Hirschfeld RMA, Calabrese JR, Weissman MM, Reed M, Davies MA, Frye MA, Keck PE, Jr., Lewis L, McElroy SL, McNulty JP, Wagner KD (2003). Screening for bipolar disorder in the community. *J Clin Psychiatry*, 64: 53–59.
- Hwu HG, Yeh EK, Chang LY (1989). Prevalence of psychiatric disorders in Taiwan defined by the Chinese Diagnostic Interview Schedule. *Acta Psychiatr Scand*, 79: 136–147.
- Kessler R, McGonagle K, Zhao S, Nelson C, Hughes M, Eshleman S, Wittchen H, Kendler K (1994). Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States. Results from the National Comorbidity Survey. *Arch Gen Psychiatry*, 51: 8–19.
- Kessler RC, Berglund P, Demler O, Jin R, Koretz D, Merikangas KR, Rush AJ, Walters EE, Wang PS (2003). The Epidemiology of Major Depressive Disorder: Results From the National Comorbidity Survey Replication (NCS-R). *JAMA*, 289: 3095–3105.
- Kraepelin E (1921). *Manic-depressive insanity and paranoia*. Edinburgh: E & S Livingstone.
- Kupfer DJ, Frank E, Grochocinski VJ, Cluss PA, Houck PR, Stapf DA (2002). Demographic and clinical characteristics of individuals in a bipolar disorder case registry. *J Clin Psychiatry*, 63: 120–125.
- Leboyer M, Henry C, Paillere-Martino ML, Bellivier F (2005). Age at onset in bipolar affective disorders: a review. *Bipolar Disord*, 7: 111–118.
- Lewinsohn PM, Seeley JR, Klein DN (2003). Bipolar disorder in adolescents: epidemiology and suicidal behavior. In: Geller B, DelBello, MP (eds). *Bipolar disorder in childhood and early adolescence*. New York: Guilford Press, 2003, pp. 7–24.
- Lin PI, McInnis MG, Potash JB, Willour V, MacKinnon DF, DePaulo JR, Zandi PP (2006). Clinical correlates and familial aggregation of age at onset in bipolar disorder. *Am J Psychiatry*, 163: 240–246.
- Lish JD, Dime-Meenan S, Whybrow PC, Price RA, Hirschfeld RM (1994). The National Depressive and Manic-depressive Association (DMDA) survey of bipolar members. *J Affect Disord*, 31: 281–294.

- McDonald WM, Nemeroff CB (1996). The diagnosis and treatment of mania in the elderly. *Bull Menninger Clin*, 60: 174–196.
- Nurnberger J, Blehar M, Kaufmann C, York-Cooler C, Simpson S, Harkavy-Friedman J, Severe J, Malaspina D, Reich T (1994). Diagnostic interview for genetic studies. Rationale, unique features, and training. NIMH Genetics Initiative. *Arch Gen Psychiatry*, 51: 849–859.
- Rihmer Z, Angst J (2005). Epidemiology of bipolar disorder. In: Kasper S, Hirschfeld, RMA (eds). *Handbook of bipolar disorder: diagnosis and therapeutic approaches*. New York: Taylor & Francis Group, pp. 21–35.
- Robins L, Helzer J, Croughan J, Ratcliff K (1981). National Institute of Mental Health Diagnostic Interview Schedule. Its history, characteristics, and validity. *Arch Gen Psychiatry*, 38: 381–389.
- Robins L, Helzer J, Weissman M, Orvaschel H, Gruenberg E, Burke J, Regier D (1984). Lifetime prevalence of specific psychiatric disorders in three sites. *Arch Gen Psychiatry*, 41: 949–958.
- Robins LN, Wing J, Wittchen HU, Helzer JE, Babor TF, Burke J, Farmer A, Jablenski A, Pickens R, Regier DA, *et al.* (1988). The Composite International Diagnostic Interview. An epidemiologic instrument suitable for use in conjunction with different diagnostic systems and in different cultures. *Arch Gen Psychiatry*, 45: 1069–1077.
- Sajatovic M, Blow FC, Ignacio RV, Kales HC (2005). New-onset bipolar disorder in later life. *Am J Geriatr Psychiatry*, 13: 282–289.
- Spitzer RL, Endicott J, Robins E (1978). Research diagnostic criteria: rationale and reliability. *Arch Gen Psychiatry*, 35: 773–782.
- Spitzer RL, Endicott J (1978). A diagnostic interview: the schedule for affective disorders and schizophrenia. *Arch Gen Psychiatry*, 35: 837–844.
- Spitzer RL, Williams JBW, Gibbon M (1990). *Structured Clinical Interview for DSM-III*. New York: Biometric Research, New York State Psychiatric Institute.
- ten Have M, Vollebergh W, Bijl R, Nolen WA (2002). Bipolar disorder in the general population in The Netherlands (prevalence, consequences and care utilisation): results from The Netherlands Mental Health Survey and Incidence Study (NEMESIS). *J Affect Disord*, 68: 203–213.
- Tohen M, Goodwin FK (1995). Epidemiology of bipolar disorder. In: Tsuang MT, Tohen, M, Zahner, GEP (eds). *Textbook in psychiatric epidemiology*. New York: Wiley-Liss, pp. 301–315.
- Verdoux H, Bourgeois M (1995). Social class in unipolar and bipolar probands and relatives. *J Affect Disord*, 33: 181–187.
- Vojta C, Kinosian B, Glick H, Altshuler L, Bauer MS (2001). Self-reported quality of life across mood states in bipolar disorder. *Compr Psychiatry*, 42: 190–195.
- Weissman M, Myers J (1978). Affective disorders in a US urban community: the use of research diagnostic criteria in an epidemiological survey. *Arch Gen Psychiatry*, 35: 1304–1311.
- Weissman M, Leaf P, Tischler G, Blazer D, Karmo M, Bruce M, Florio L (1988). Affective disorders in five United States communities. *Psychol Med*, 18: 141–153.
- Weissman MM, Bruce ML, Leaf PJ, Florio LP, Holzer C (1991). Affective disorders. In: Robins LN, Regier, DA (eds). *Psychiatric disorders in America: the Epidemiologic Catchment Area Study*. New York: Free Press, pp. 53–80.
- Wing J, Mann S, Leff J, Nixon J (1978). The concept of a ‘case’ in psychiatric population surveys. *Psychol Med*, 8: 203–217.
- Wing J, Babor T, Brugha T, Burke J, Cooper J, Giel R, Jablenski A, Regier D, Sartorius N (1990). SCAN. Schedules for Clinical Assessment in Neuropsychiatry. *Arch Gen Psychiatry*, 47: 589–593.
- Wing JK, Cooper JE, Sartorius N (1974). *Measurement and classification of psychiatric symptoms: an instruction manual for the PSE and CATEGO Program*. London: Cambridge University Press.
- Winokur G (1975). The Iowa 500: heterogeneity and course in manic-depressive illness (bipolar). *Compr Psychiatry*, 16: 125–131.
- World Health Organization (ed) (1993). *The ICD-10 classification of mental and behavioural disorders: diagnostic criteria for research*. Geneva: World Health Organization.