

## Lifetime risk of depression: restricted to a minority or waiting for most?

GAVIN ANDREWS, RICHIE POULTON and INGMAR SKOOG

**Summary** Depression remits and recurs, but among what proportion of the population? Retrospective surveys report the lifetime risk to be around 10%. A modelling study and two prospective studies concur that close to half the population can expect one or more episodes of depression in their lifetime.

**Declaration of interest** None.

Depression (ICD-10 F32, F33 or DSM equivalent) is a common disease. In 1990, in established market economies, depression was estimated to be second only to ischaemic heart disease as a cause of disease burden. It was the largest single cause of non-fatal burden (Murray & Lopez, 1996). It is a disease that often remits and recurs (Andrews, 2001), but does it remit and recur among a restricted number of people or will it, like influenza, affect most of us in the fullness of time? Two recent reviews, that conducted secondary analysis of data from established market economies, came to very different conclusions. Waraich *et al* (2004) estimated the lifetime risk of ever having a major depressive episode to be 6.7%, whereas Kruijshaar *et al* (2005) estimated the lifetime risk to be 40% in women and 30% in men. Can both be correct?

### CAN CROSS-SECTIONAL SURVEYS INFORM?

The Epidemiologic Catchment Area study in the USA was the first survey to use a structured diagnostic interview to systematically ask community residents about the symptoms of depression (Weissman *et al*, 1991). About 5% of respondents reported ever having had symptoms that matched DSM-III criteria and the disorder appeared to be confined to a small group. There are two reasons why this is likely to be an

underestimate. First, as the average age of the weighted sample was about 40, many had not lived through the full period of risk. The other reason for an underestimate is that recall of symptoms occurring years earlier is less than perfect. Even among people admitted to hospital for depression only half met criteria when asked about symptoms of depression 25 years later (Andrews *et al*, 1999). In the Epidemiologic Catchment Area studies, the lifetime risk declined with age of the respondent, a finding that can only be explained by a cohort effect or by failure to recall a disorder that is more prevalent in the younger years.

The US National Comorbidity Survey used the Composite International Diagnostic Interview (CIDI) to determine a history of symptoms that matched DSM-III-R major depressive disorder (Blazer *et al*, 1994). The lifetime risk was 17.1%. Rates were higher in females and younger respondents. Respondents were aged 15–54 (mean 34), so no one interviewed had survived their full period of risk. Similar surveys were conducted in ten developed countries under the aegis of the International Consortium of Psychiatric Epidemiology (Andrade *et al*, 2003). Lifetime risk of hierarchy free DSM-III-R/DSM-IV major depressive episode varied widely, from 3% in Japan (surveys in Asian countries routinely report low rates of depression) to 16.9% in the USA, with the majority in the range of 8% to 12%. Again, the lifetime risk was higher in females and in younger respondents.

Waraich *et al* (2004) conducted a systematic review of the literature for the 21 years, 1980–2000. They reported on 15 studies of major depressive disorder that mostly used the CIDI/DSM-III-R. Their best estimate was 6.7% (95% CI 4.2–10.1) with lower rates in Taiwan and Korea and a very high rate with a telephone survey in Montreal, Canada. Rates in women were double those in men but they found little evidence of an overall age effect. They argued that the prevalence of depression in

these high-quality studies was lower than the rates commonly reported in the literature and that the burden of this disease should therefore be revised downward. They did not address the issues of recall bias or of period of risk yet to come.

Because the lifetime risk of depression is biased by recall problems and by the age of those being interviewed it was estimated indirectly for two countries by Kruijshaar *et al* (2005). They used a microsimulation model to generate population-based measures of depression. The two national surveys were the Netherlands Mental Health Survey and Incidence study (Bijl *et al*, 1998) and the Australian National Survey of Mental Health and Well-Being (Andrews *et al*, 2001). Based on the 1 month and 12 month prevalence data from those surveys it was estimated that approximately 30% of men and 40% of women would suffer from one or more episodes of major depression during their life. Lifetime rates observed in cross-sectional surveys are, as noted above, much lower than this, first because these surveys cannot identify cases that become incident after the survey, and second because of recall bias. That the true lifetime risk could be three times that estimated by the cross-sectional surveys is a matter of concern, but to a certain extent explains why depression is such an important public health problem.

### PROSPECTIVE STUDIES SHOULD BE BETTER

Prospective cohort studies in which people are assessed at regular intervals should minimise recall bias, whereas cohort studies that follow people into old age should minimise the incidence problem. Both types of studies exist. The Dunedin Multidisciplinary Health and Development study has been following a 1972/1973 birth cohort of 1037 children, and 96% of the cohort between the ages of 11 and 26 completed repeat psychiatric interviews using the Diagnostic Interview Schedule. By the age of 26, 37% (369/998) had met criteria for a major depressive episode, with the highest incidence of new cases being between the 15th and 18th birthdays (Jaffee *et al*, 2002). Even allowing that the young are at the greater risk of first-onset depression, this Dunedin cohort have at least two thirds of their life expectancy yet to come. The 35% lifetime risk in the modelling study

referred to above (Krujshaar *et al*, 2005) may therefore be conservative.

Reviews suggest that well-being increases with age (Jorm, 2000), but few epidemiological studies have included people over the age of 70. There is a prospective study of first-onset DSM-III-R depression in a representative sample of 70-year-olds followed for 15 years and interviewed six times by psychiatrists. Palsson *et al* (2001) found that rates were considerable, and that the prevalence rose in the very old, affecting 13% of those aged 85. The investigators combined the clinical information on the total cohort with that from clinical records for the years prior to these individuals entering the study and concluded that the lifetime risk of depression in these people who were healthy enough to survive to old age was 23% in men and 45% in women (Palsson *et al*, 2001). The ability to identify ambulatory care episodes of depression in this cohort born at the beginning of the last century must be poor, but already the investigators have found evidence of being treated for depression in 30% of these elderly people who said they had never been troubled by depression. Genetic studies, as Palsson *et al* note, will be compromised by people with the phenotype being included in the control group. The total lifetime risk must be higher than the figures in these two prospective studies, and certainly much more than that reported in the cross-sectional studies.

## CONCLUSION

Perhaps depression in the Western world will affect half the population during their

GAVIN ANDREWS, FRCPsych, School of Psychiatry, University of New South Wales, Sydney, Australia; RICHIE POULTON, PhD, Dunedin Multidisciplinary Health and Development Research Unit, University of Otago, Dunedin, New Zealand; INGMAR SKOOG, MD, Department of Psychiatry, Sahlgrenska University Hospital, Goteborg, Sweden

Correspondence: Professor Gavin Andrews, School of Psychiatry, UNSW at St Vincent's Hospital, Sydney, Australia 2010. E-mail: gavina@unsw.edu.au

(First received 1 April 2005, final revision 3 May 2005, accepted 20 May 2005)

lifetime, and have incidence peaks in the young and the very old. These are the two groups in the population who are most likely to have their depression go unrecognised, and the two groups in which treatment with antidepressants or cognitive-behavioural therapy is problematic. Psychiatrists and general practitioners dealing with adolescents and the elderly should take note. Perhaps they have, and it is the rest of us who need to note the frequency of depression and the high incidence at the extremes of life.

## REFERENCES

- Andrade, L., Caraveo-Anduaga, J. J., Berglund, P., et al (2003)** The epidemiology of major depressive episodes: results from the International Consortium of Psychiatric Epidemiology Surveys. *International Journal of Methods in Psychiatric Research*, **12**, 3–21.
- Andrews, G. (2001)** Should depression be managed as a chronic disease? *BMJ*, **322**, 419–421.
- Andrews, G., Anstey, K., Brodaty, H., et al (1999)** Recall of depressive episodes 25 years previously. *Psychological Medicine*, **29**, 787–791.
- Andrews, G., Henderson, S. & Hall, W. (2001)** Prevalence, comorbidity, disability and service utilisation. Overview of the Australian National Mental Health Survey. *British Journal of Psychiatry*, **178**, 145–153.
- Bijl, R. V., Ravelli, A. & van Zessen, G. (1998)** Prevalence of psychiatric disorder in the general population: Results of the Netherlands Mental Health and Incidence study. *Social Psychiatry and Psychiatric Epidemiology*, **33**, 587–595.
- Blazer, D. G., Kessler, R. C., McGonagle, K. A., et al (1994)** The prevalence and distribution of major depression in a national community sample. *American Journal of Psychiatry*, **151**, 979–986.
- Jaffee, S. R., Moffitt, T. E., Caspi, A., et al (2002)** Differences in early childhood risk factors for juvenile-onset and adult-onset depression. *Archives of General Psychiatry*, **58**, 215–222.
- Jorm, A. F. (2000)** Does old age reduce the risk of anxiety and depression? A review of epidemiological studies across the adult life span. *Psychological Medicine*, **30**, 11–22.
- Krujshaar, M. E., Barendregt, J., Vos, T., et al (2005)** Lifetime prevalence estimates of major depression: an indirect estimation method and a quantification of recall bias. *European Journal of Epidemiology*, **20**, 103–111.
- Murray, C. J. L. & Lopez, A. D. (1996)** *The Global Burden of Disease*. Geneva: World Health Organization.
- Palsson, S. P., Ostling, S. & Skoog, I. (2001)** The incidence of first onset depression in a population followed from the age of 70 to 85. *Psychological Medicine*, **31**, 1159–1168.
- Waraich, P., Goldner, E. M., Somers, J. M., et al (2004)** Prevalence and incidence studies of mood disorders: a systematic review of the literature. *Canadian Journal of Psychiatry*, **49**, 124–138.
- Weissman, M. M., Bruce, M. L., Leaf, P. J., et al (1991)** Affective disorders. In *Psychiatric Disorders in America* (eds L. N. Robins & D. A. Regier), pp. 53–80. New York: Free Press.