The National Psychiatric Morbidity Surveys of Great Britain – initial findings from the Household Survey

R. JENKINS,[1] G. LEWIS, P. BEBBINGTON, T. BRUGHA, M. FARRELL, B. GILL
AND H. MELTZER

From the Mental Health Division, Department of Health, Department of Psychiatry and Behavioural Sciences, University College London Medical School, Institute of Psychiatry and Social Survey Division, Office of Population Censuses and Surveys, London; Department of Psychological Medicine, University of Wales College of Medicine, Cardiff; and Department of Psychiatry, University of Leicester

ABSTRACT

Background. This paper describes the Household Survey from the National Survey of Psychiatric Morbidity. This covered a sample drawn at random from the population of Britain, with the exception of the Highlands and Islands of Scotland.

Methods. The Postcode Address file was used as the sampling frame. Nearly 13 000 adults aged 16–65 were selected for interview, of whom 10 108 (79·4%) were successfully interviewed. Eight per cent could not be contacted and 13% refused interview. Psychiatric assessment was carried out by lay interviewers using the CIS-R. Subjects were also screened for psychosis, and screen-positive individuals were examined by psychiatrists using SCAN.

Results. Sixteen per cent of subjects scored above the standard cut-off of 12 on the CIS-R. The overall 1-week prevalence of neurotic disorder was 12·3% in males and 19·5% in females. Unmarried and post-marital groups had high rates of disorder, as did single parents and people living on their own. Respondents in Social Class I had notably lower rates of neurotic disorder than the remainder of the sample. Unemployment was strongly associated with disorder. Subjects living in urban areas had a higher overall prevalence, but there was no significant variation by region. Black respondents had higher rates of disorders that were entirely explained by their age, family type and social class. Individual neurotic disorders were all significantly commoner in women, with the exception of panic disorder. The 1-year prevalence of functional psychoses was 4 per 1000, with no sex difference. Alcohol and drug dependence was considerably more prevalent in men.

Conclusions. For the first time, the survey provides data on the prevalence and correlates of psychiatric disorder on a nationwide sample that can be used to inform equitable and effective national psychiatric services.

INTRODUCTION

Over the last half of the twentieth century, there have been major developments in the methods used for psychiatric surveys of the general population. The current surveys have been described as a third generation (Dohrenwend & Dohrenwend, 1982), being the first to use standardized assessments of the mental state. They are immeasurably better than their predecessors in that we can now place some credence on the reported prevalence of common mental disorders in the general population. They permit the identification of high risk groups free from the bias of studying only referred cases, and an appreciation of what determines the use of services, since not all those with disorder will refer themselves to family doctors or be referred on to specialists.

In the early Scandinavian and American

[1] Address for correspondence: Dr Rachel Jenkins, Mental Health Division, Department of Health, Wellington House, 133–155 Waterloo Road, London SE1 8UG.

surveys (e.g. Strömgren, 1938; Roth & Luton, 1942; Sjögren, 1948), trained psychiatrists interviewed informants and reached a diagnosis by using their clinical skills in the ordinary way. There was no formal attempt to standardize case definition. These surveys produced values for morbid risk that were very similar for the major psychoses, but which varied considerably for the neuroses.

The first real attempts at standardization were in studies from Canada and the US in the 1950s (Srole *et al.* 1962; Leighton *et al.* 1963). Self-report schedules provided a standard coverage of possible symptoms. However, they used summed symptom scores as position indicators on a continuum from health to abnormality and subjects were divided into groups according to their degree of impairment. These divisions were regarded merely as statistical conveniences.

The authors of the third generation of community surveys felt strongly that classification was a crucial part of the study of psychiatric disorder, and that reliable and comparable measures could be established if the classifying rules were made explicit and precise. This permits the identification of cases comparable with those seen and treated by psychiatric clinicians. One group of studies used the Present State Examination (Wing *et al.* 1974; Wing & Sturt, 1978) to identify cases. This is a semi-structured and flexible interview schedule which relies on the interviewers' ability to match glossary-defined symptoms with the respondents' mental experiences. Its validity has been demonstrated in a number of ways (e.g. Wing *et al.* 1981). It shows good reliability and has now been used in population surveys in London (Brown & Harris, 1978; Bebbington *et al.* 1981*a*; Mavreas & Bebbington, 1987), Canberra (Henderson *et al.* 1981), Calgary (Costello, 1982), Edinburgh (Surtees *et al.* 1983), Athens (Mavreas *et al.* 1986), Santander, Spain (Vázquez-Barquero *et al.* 1987), Nijmegen in the Netherlands (Hodiamont *et al.* 1987), Dunedin, New Zealand (Romans-Clarkson *et al.* 1988), Finland (Lehtinen *et al.* 1990), Sardinia (Carta *et al.* 1991), and Uganda (Orley & Wing, 1979). It allows classification according to a limited number of categories of ICD-9 (WHO, 1978), mainly covering functional psychoses and effective disorders. Whatever they mean in diagnostic terms, the thresholds of the affective categories

are lower than those of the more modern DSM-III-R, DSM-IV and ICD-10, and the prevalences derived are consequently somewhat greater.

A tenth edition of the PSE (PSE-10) has now been developed. It is incorporated into a comprehensive instrument, Schedules for Clinical Assessment in Neuropsychiatry (SCAN – Wing *et al.* 1990; WHO, 1992, 1994). This more elaborate assessment of psychiatric symptoms and course is served by a computer program that provides classification according to DSM-III-R, DSM-IV and ICD-10. This instrument is now being used in community and general practice surveys (Bebbington *et al.* 1996; Brugha *et al.* 1997*a*; McConnell *et al.* 1996; Vázquez-Barquero *et al.* 1996) and formed the basis of the assessment of psychotic disorders in the current study.

The PSE depends on administration by people of some clinical sophistication, although it has been used as a screening device by lay interviewers (Sturt *et al.* 1981). This requirement for clinical skills was a concern to researchers in the United States, where there is a tradition of employing lay interviewers, and it led to the development of the Diagnostic Interview Schedule (DIS – Robins *et al.* 1981, 1985). The DIS deliberately incorporates a very rigid structure: it is a list of questions whose form is exactly prescribed. Interviewers are trained not to deviate from the printed format, so that the scope for clinical judgement is reduced to a minimum.

The data obtained by the DIS were originally used to establish period and lifetime diagnoses according to the criteria of DSM-III (APA, 1980), later DSM-III-R (APA, 1987). It was used in the important population surveys of the Epidemiologic Catchment Area (ECA) Program (Eaton & Kessler, 1985; Robins & Regier, 1991), results from which have now been extensively published. It has also been used in general population surveys in Puerto Rico (Canino *et al.* 1987), Edmonton, Canada (Bland *et al.* 1988), Taiwan (Hwu *et al.* 1989), Christchurch, New Zealand (Wells *et al.* 1989), Paris (Lepine *et al.* 1989), Seoul (Lee *et al.* 1990*a*, *b*), Lesotho (Hollifield *et al.* 1990), Beirut (Karam, 1991) and Munich (Wittchen *et al.* 1992). It covers appreciably more diagnostic categories than PSE-9, in particular substance abuse disorders.

The Composite International Diagnostic Instrument (CIDI – Robins *et al*. 1988) is a later development, based largely on the DIS and sharing its philosophy of trying to eliminate the need for clinical judgement by prescribing very precisely the form and direction of enquiry. However, it also includes neurotic and some psychotic items from the PSE. Like the DIS, it is designed for use by lay interviewers. It originally provided classification according to DSM-III-R (APA, 1987), to which has now been added ICD-10 and DSM-IV. A variant of this instrument (the University of Michigan version UM-CIDI) has now been used in the large United States National Comorbidity Survey (NCS – Kessler *et al*. 1993, 1994).

Another group of studies has used the Clinical Interview Schedule, which has recently been revised to provide diagnostic classes according to ICD-10 (Lewis *et al*. 1992). These have been discussed by Jenkins and her colleagues (1997).

Other instruments have been used in community psychiatric surveys to provide prevalences of disorders defined in standard classifications. For instance, Weissman & Myers (1978) used the SADS (Endicott & Spitzer, 1978) in the third wave of the New Haven survey. However, the studies described above are large in number, sample size or scope, and thus most suitable for comparison with the Household Survey described here.

Between them, the instruments described above have established prevalences that are reasonably credible, particularly for states of anxiety and depression. Because the PSE studies rely on clinical interviewers, they tend to be smaller in scale, with sample sizes ranging from a few hundred to a thousand. This adds to problems of generalizability. The DIS studies are generally larger, and the ECA project involved over 19 000 subjects, based in five sites across the United States. These sites were chosen primarily for the enthusiasm and commitment of the academics working in them, but also offered incidental benefits of covering different populations and life styles. Although the results are interesting, there are problems of extrapolating them to make statements about psychiatric morbidity in the UK as a whole.

The first genuine national household survey in any country was the National Comorbidity Survey (Kessler *et al*. 1993, 1994), based on the UM-CIDI. This covered over 8000 subjects forming a probability sample of the 48 contiguous United States. National samples of this type allow more definitive statements about nationwide psychiatric morbidity, and also about regional and sociodemographic variation. Now that we have systematically developed technology of case finding, there is a need to apply it to national data. This was the rationale for the study that forms the basis of this report.

The National Surveys of Psychiatric Morbidity were carried out in 1993 and 1994 (Jenkins *et al*. 1997). The present paper contains results from the Household Survey, amplifying and adding to those already published as a UK Office of Population Censuses and Surveys (OPCS) technical report (Meltzer *et al*. 1995). Our aims are as follows: to provide an estimate of prevalence of neurotic symptoms and an overall category of neurotic disorder in Great Britain; to record the associations of disorder with important sociodemographic variables; to provide estimates of the prevalence in Great Britain of individual neurotic disorders, functional psychoses and alcohol and drug dependence.

The current paper provides information necessary for a scientific readership to evaluate the survey and to place it in the context of other studies. Analyses were chosen because they were epidemiologically relevant and would aid interpretation. The selection of sociodemographic variables was made on the basis that they tapped variations in social disadvantage that might be reflected in high risk of psychiatric disorder. The method of multivariate analysis used here differed from that presented in the technical report: in the latter, there was no *a priori* selection of variables, which were entered into regression models in a stepwise manner, whereas in the current analyses the relationship between a chosen variable and neurotic disorder is assessed by controlling for all other likely confounding variables.

METHOD
Sampling

In the previous paper (Jenkins *et al*. 1997), we have provided the broad framework of the methods for all the surveys, and described the pilot work that preceded them. The household

Table 1. *Hierarchy of functional disorders used to establish single primary diagnosis*

Disorder 1	Disorder 2	Priority
Psychosis	Any	Psychosis
Depressive episode (any severity)	Phobia	Depressive episode (any severity)
	OCD	
Depressive episode (mild)	OCD	OCD
	OCD	
Depressive episode (moderate)	Panic disorder	Depressive episode (moderate)
	Panic disorder	
Depressive episode (severe)	GAD	Depressive episode (severe)
	OCD	
Depressive episode (mild)	GAD	Panic disorder
	GAD	Depressive episode (moderate)
Depressive episode (moderate)	GAD	Depressive episode (any severity)
	OCD	
Depressive episode (any severity)	GAD	OCD
	GAD	Agoraphobia
Phobia (any)		Social phobia
Agoraphobia		GAD
Social phobia		Panic disorder
Specific phobia		OCD
Panic disorder		Panic disorder
OCD		
Panic disorder		

GAD, generalized anxiety disorder; OCD, obsessive–compulsive disorder.

sample was drawn using the Small Area Postcode Address File as the sampling frame. In the Postal Address File, postal sectors were stratified by socio-economic group within each Regional Health Authority. Each postal sector has, on average, 2550 delivery points. Two hundred postal sectors covering all of Great Britain except the Highlands and Islands of Scotland were selected at random, with a probability proportional to the number of delivery points. Within these, 90 delivery points were randomly selected, yielding a sample of 18000 delivery points.

Experienced OPCS interviewers visited the 18000 addresses to identify private households with at least one person aged 16–64. There was one interviewer for each postal sector sample, i.e. 200 interviewers in all. Each was given a total of 90 addresses to visit, in two equal waves, with a short rest period between them. The Kish grid method (Kish, 1965) was used to select at random one person in each household, ensuring that all household members who were eligible for the survey had the same chance of being selected. In all, 15765 private households were identified and 12730 adults selected for interview; the remaining households did not contain an adult within the 16–64 age range. Household size was defined as the number of people aged 16–64 who were eligible for the survey. An adult who was living in an institution for at least 6 months was not included, but would be eligible for inclusion in the institutional survey. Thus, household members in hospital for less than 6 months were eligible and if selected could be interviewed there.

Only one adult aged 16–64 years was interviewed in each household. This was done in preference to interviewing all eligible adults because it helped interviewers conduct the interview in privacy and reduced the interviewing burden placed on the household. In addition, individuals within households tend to be similar to each other in social and psychological terms and this can result in a substantial increase in the standard errors of the prevalence estimates.

Assessment

Every subject was interviewed using a detailed questionnaire covering sociodemographic characteristics, general health, life events and social support. This is described in detail elsewhere (Meltzer *et al.* 1995).

Neurotic disorder

Neurotic psychiatric disorder was assessed using the Revised Clinical Interview Schedule (CIS-R; Lewis *et al.* 1992), which provides prevalences covering a 1-week period. Those scoring above 12 on the CIS-R were regarded as suffering from a neurotic disorder (Lewis *et al.* 1992). In addition, ICD-10 diagnoses were defined using an explicit hierarchy (Meltzer *et al.* 1995), so that each was allocated to a single (primary) diagnosis (see Table 1). Note that panic disorder and obsessive–compulsive disorder take precedence over mild cases of depression, while generalized anxiety disorder trumps specific phobia but not social phobia or agoraphobia. 'Depressive episode' included the ICD-10 codes of F32.00 to F32.2. The ICD-10 Category, 'mixed anxiety and depressive disorder' (F41.2), lacks specific diagnostic criteria for research (DCRs): in this category we placed all subjects who were above threshold on the CIS-R, but failed to meet the explicit DCRs for the other neurotic categories. This hierarchical treatment of the psychiatric data obscures co-morbidity, which will be described in papers currently in

preparation. The text of the CIS-R and the ICD-10 algorithm have been described fully in the technical report (Meltzer *et al.* 1995) and are discussed further by Jenkins *et al.* (1997).

Psychotic disorders

All subjects were then screened for psychosis, a process that included the Psychosis Screening Questionnaire (Bebbington & Nayani, 1995), but also enquiries about the prescription of neuroleptic drugs and depot injections. Finally, if subjects reported that a diagnosis of psychosis had been made by a clinician, they too were invited for further assessment. Subjects positive on the psychosis screen were interviewed as soon afterwards as possible by psychiatrists trained in the SCAN (Wing *et al.* 1990; WHO, 1992). In view of the expected low prevalence of psychotic disorders, a single category was created corresponding to ICD-10 codes F20–F30 and those F31 codes that require psychotic symptoms. In the absence of a SCAN interview, a project diagnosis of probable functional psychosis was still made if the subject met two of the following three criteria: scoring above threshold on the PSQ; reporting that they were taking anti-psychotic medication; and reporting that they had been given a diagnosis of psychotic illness by a doctor. The prevalence of psychosis was based on a 1-year period.

Definition of alcohol and drug dependence

Twelve questions based on those in the US National Alcohol Survey (Hilton, 1991) were used in the survey, designed to assess dependence on alcohol. Those who scored 3 or more were classified as alcohol dependent. Five questions on drug dependence were taken from the ECA (Robins & Regier, 1991): frequency of drug use, stated dependence, inability to cut down, need for larger amounts, and withdrawal symptoms. Current users of drugs who answered positively to one of the questions were classified as dependent. The prevalence of substance abuse was based on a 1-year period, and was not subjected to hierarchical rules. It thus includes co-morbid cases.

Family type

For the 'lone parent' and 'couple with child' categories, the children concerned might be adult, provided they had not been married or did not have children of their own in the household. The single person category does not necessary mean living alone, as it also covered people living with another family unit (whether related or not) and adults living in a shared household.

Social class

Social class was classified according to the Registrar General's classification (OPCS, 1990) with a married or cohabiting woman classified according to her partner's occupation unless he was not currently working. For those not currently employed, coding was based on their last occupation.

Employment status

Employment status was divided into four groups, with the employed group including those doing unpaid work for a family business. The unemployed category also included those who were intending to look for work but unable to because of 'temporary sickness' (defined by the respondent), ill-health or injury. The economically inactive group included housewives, students, the retired, and those permanently unable to work because of illness or disability.

Urban/rural residence

Interviewers were asked to code the area around the home as urban, semi-rural or rural. In the pilot survey these judgements were checked against population density measures and proved to be valid.

Region/country

For the purposes of analysis, England was subdivided. Northern England comprised the following former Regional Health Authorities: Northern, Mersey, North West, Yorkshire, Trent, West Midlands. The remainder was classified as Southern England.

Ethnic group

The respondents were asked to allocate themselves an ethnic group, using the same categories as the UK 1991 census. Because of the relatively small numbers in most groups, two non-white categories were created: Asian/Oriental, comprising Indian, Pakistani, Bangladeshi and

Chinese individuals and Afro-Caribbean/ African, including the Black-Caribbean, Black-African and Black-Other categories.

Interviewers and interviewer training

The first stage of the surveys was carried out by 200 interviewers from the staff of the British Office of Population Censuses and Surveys. They had a minimum of 3 years prior interviewing experience and went through a day's training programme in the use of the survey instruments. Field work was closely monitored by supervisors in the field, and by headquarters staff. There was a weekly despatch of work so any problems could be quickly remedied.

Thirty psychiatrists were selected by asking academic departments around Britain to nominate psychiatrists who had completed the majority of their postgraduate professional training. The psychiatrists attended a 1-week training course in SCAN in London, Nottingham, Leicester or Cardiff. Most used the lap-top assisted version of the SCAN, although some chose to enter data later (WHO, 1992).

Further details of the methods and the complete text of questionnaires used in the study are provided in the first technical report (Meltzer *et al.* 1995).

Analysis

Two approaches towards analysis were adopted.

Prevalence estimation

In order to provide unbiased prevalence estimates for the household population of Great Britain, the results were adjusted for differential sampling by household size and for non-response (refusals and non-contacts) according to household size. The interviewed sample was also compared by age and sex with the population projection from the 1981 census, and differences were subject to adjustment. This was performed by multiplying by weights. After this procedure, a final factor (unweighted sample size/weighted sample size) was applied to return the sample to its original size (see Meltzer *et al.* (1995), for values of weights).

In view of the multi-stage random sampling, 95% confidence intervals were calculated from standard errors estimated using the EPSILON program (developed by the Methods and Sampling Unit of the Social Survey Division of OPCS) to make allowance for this sampling strategy.

Associations

Odds ratios were used to study the associations between the various sociodemographic characteristics of the respondents and psychiatric disorder. Odds ratios and 95% confidence intervals were calculated using logistic regression, both before and after adjustment for various sociodemographic factors using the program Stata (Stata Corporation, 1995). The analysis was performed in Stata utilizing Huber's formula (Huber, 1967) for individual level data, taking account of the clustered sampling. The unweighted sample was used for these analyses as we were interested in relative measures of effect within the observed sample and we adjusted for sociodemographic variables using logistic regression rather than a weighting procedure. We also adjusted for household size to take account of the sampling design, as individuals from small households were over-represented in the sample. When associations were adjusted using the variable 'family type', this also adjusted for this sampling design as the one person households were categorized as 'one person' and had higher rates of psychiatric morbidity.

For common conditions, odds ratios tend to be larger than risk ratios and this will be the case for unadjusted odds ratios. In the logistic regression models, after adjustment, the odds ratios will approximate to risk ratios, because the odds ratio was then compared with a constant term with a lower odds.

RESULTS

Sampling

Of the 12730 adults selected for interview, 8% (981) could not be contacted and a further 13% (1641) refused to take part. The overall response rate was 79·4% and 10108 individuals completed interviews. The reasons for refusal were sought by the interviewers. People who refuse to take part in surveys about mental health may be more likely to have a mental health problem than those who cooperate (Clark *et al.* 1983; Williams & Macdonald, 1986). Although self-reports about reasons for refusal must be treated
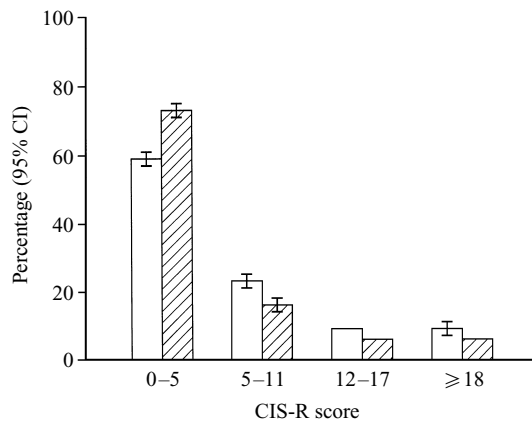
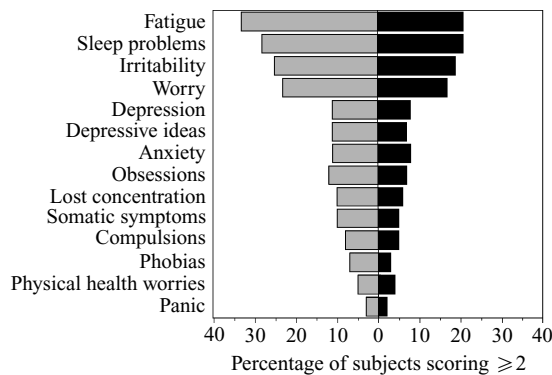FIG. 1. Distribution of total CIS–R score by sex (▨, male; □, female).

FIG. 2. CIS–R symptoms by age and sex (■, male; ▨, female).

Where household size was known, non-responding households were more likely to contain a single adult aged 16–64. Men aged 40–44 and women aged 50–54 were proportionately more represented in non-responding households while men aged 45–49 and women aged 16–19 were proportionately more represented in cooperating households.

Neurotic symptoms

Fig. 1 shows the distribution of total scores on the CIS-R for the surveyed household sample. The female distribution indicates a clear tendency for them to report more symptoms than men. Overall, 16% of the sample were on or above the threshold score of 12, while two-thirds of the sample scored below 6. Fig. 2 gives the prevalence of the 14 neurotic symptoms described by the CIS-R for men and women. All the symptoms are commoner in women than men and the commonest symptom was fatigue with an overall prevalence of 270 per 1000.

Prevalence of neurotic disorder

Psychiatric morbidity was appreciably more prevalent in women than men (Table 2) and this difference was of the same magnitude after adjustment for age, social class and household size. There was little variation in prevalence with age until the oldest age group (55–64) was reached. This had a significantly lower prevalence of psychiatric morbidity (Table 2).

Sociodemographic associations of disorder

The married and cohabiting respondents had a slightly lower prevalence than the never married, but this difference was not statistically significant

cautiously, the most frequently given reasons were that the subjects could not be bothered, were too busy, did not believe in surveys or disliked having their privacy disturbed. Of refusers, only 1 in 9 declined because of 'personal problems'.

Table 2. *Overall 1-week prevalence of neurotic disorder by gender and age*

	Sample size	Prevalence, cases per 1000 (95% CI)	Crude odds ratios (95% CI)	Adjusted* odds ratios (95% CI)
Gender				
Male	4859	123 (113–133)	1·00†	1·00†
Female	4933	195 (181–209)	1·76 (1·57–1·97)	1·72 (1·53–1·93)
Age				
16–24	1871	150 (132–168)	1·00†	1·00†
25–39	496	166 (152–180)	1·07 (0·90–1·27)	1·07 (0·88–1·28)
40–54	2878	170 (156–184)	1·09 (0·92–1·31)	1·09 (0·91–1·33)
55–64	1547	137 (111–163)	0·77 (0·63–0·94)	0·67 (0·54–0·84)

* Adjusted for age or sex and social class and household size.
† Baseline.

Table 3. *Overall 1-week prevalence of neurotic disorder by marital status and family type*

	Sample size	Prevalence, cases per 1000 (95% CI)	Crude odds ratios (95% CI)	Adjusted* odds ratios (95% CI)
Marital status				
Never married	2357	157 (142–172)	1·00†	1·00†
Married/cohabiting	6484	147 (138–156)	0·84 (0·74–0·96)	0·89 (0·76–1·05)
Divorced/separated	692	261 (228–294)	1·97 (1·65–2·34)	1·77 (1·45–2·16)
Widowed	213	254 (202–306)	1·50 (1·14–1·98)	1·51 (1·1–2·07)
Family type				
Couple without children	2586	134 (118–150)	1·00†	1·00†
Couple with children	3925	155 (141–169)	1·21 (1·04–1·40)	1·01 (0·86–1·20)
Lone parent	562	281 (249–313)	2·88 (2·38–3·48)	1·74 (1·41–2·16)
One person	1323	209 (189–229)	1·80 (1·54–2·11)	1·64 (1·39–1·93)
Respondent in parental home	1397	124 (104–144)	0·81 (0·63–1·03)	0·71 (0·53–0·95)

* Adjusted for age, sex, social class, employment status, and urban or rural residence.
† Baseline.

Table 4. *Overall 1-week prevalence of neurotic disorder by social class and employment status*

	Sample size	Prevalence, cases per 1000 (95% CI)	Crude odds ratios (95% CI)	Adjusted* odds ratios (95% CI)
Social class				
I	649	102 (78–126)	1·00†	1·00†
II	2554	145 (129–161)	1·47 (1·12–1·94)	1·33 (1·01–1·76)
III non-manual	1484	182 (160–204)	1·89 (1·43–2·52)	1·41 (1·05–1·89)
III manual	2778	158 (142–174)	1·60 (1·21–2·10)	1·46 (1·11–1·93)
IV	1482	182 (158–206)	1·98 (1·49–2·63)	1·49 (1·11–2·00)
V	512	185 (149–221)	2·00 (1·43–2·81)	1·42 (1·00–2·01)
Employment				
Full-time	5034	118 (106–130)	1·00†	1·00†
Part-time	1666	160 (140–180)	1·42 (1·21–1·66)	1·20 (1·01–1·44)
Unemployed	847	259 (225–293)	2·59 (2·17–3·10)	2·39 (1·98–2·89)
Economically inactive	2238	212 (192–232)	1·98 (1·74–2·26)	1·87 (1·60–2·18)

* Adjusted for social class or employment status and age, sex, urban/rural residence and family type.
† Baseline.

(Table 3). However, both the divorced or separated and the widowed had a higher prevalence, which persisted after adjustment. Lone parents had increased rates of psychiatric morbidity, as did those in the single-person category. Both these factors were still strongly associated with psychiatric morbidity after adjustment for the other potential confounding variables (Table 3).

There was a social class gradient, with those in the manual groups having higher rates than those in non-manual occupations (Table 4). This gradient was reduced after adjustment. There was still a statistically significant test for trend ($\chi^2 = 4.85$, df $= 1$, $P = 0.03$), but this was largely the effect of a much lower rate in social class I subjects. The unemployed and economically inactive both had a strikingly higher prevalence of psychiatric morbidity, and there was little change in the magnitude of effect after adjustment.

There was also a strong association between living in urban areas and psychiatric morbidity. This persisted after adjustment for a number of individual level variables (Table 5). The prevalence of psychiatric morbidity in the South of England was compared with the North, Wales and Scotland. There was no statistically significant differences between these areas (Table 5), and no differences were apparent after adjustment.

Only 5·0% of the sample claimed membership of a Non-white ethnic group, while 4·1% were classified into the two main ethnic subgroupings (Table 6). The Black group had higher rates of psychiatric morbidity which almost reached

Table 5. *Overall 1-week prevalence of neurotic disorder by urban/rural residence and geographical area*

	Sample size	Prevalence, cases per 1000 (95 % CI)	Crude odds ratios (95 % CI)	Adjusted* odds ratios (95 % CI)
Residence				
Rural	1010	113 (83–143)	1·00†	1·00†
Mixed	2331	137 (123–151)	1·22 (0·97–1·53)	1·16 (0·91–1·48)
Urban	6450	175 (163–187)	1·65 (1·34–2·03)	1·41 (1·14–1·76)
Geographical area				
Southern England	4478	156 (144–168)	1·00†	1·00†
Northern England	4136	164 (152–176)	0·94 (0·83–1·05)	1·03 (0·92–1·17)
Wales	499	169 (133–205)	1·04 (0·81–1·34)	1·19 (0·92–1·56)
Scotland	678	153 (119–187)	1·05 (0·85–1·30)	1·05 (0·84–1·32)

* Adjusted for region/country or urban/rural residence and age, sex, social class, family type, employment status.
† Baseline.

Table 6. *One-week prevalence of neurotic disorder by ethnic group*

Ethnic group	Sample size	Prevalence, cases per 1000 (95 % CI)	Odds ratios (95 % CI)	Adjusted* odds ratios (95 % CI)
White	9179	159 (149–169)	1·00†	1·00†
Asian/Oriental	299	182 (118–246)	1·12 (0·79–1·58)	1·14 (0·79–1·65)
Afro-Caribbean	148	173 (119–227)	1·43 (0·98–2·08)	1·02 (0·68–1·52)

* Adjusted for age, sex, social class, urban/rural residence, family type and employment status.
† Baseline.

Table 7. *Prevalence per 1000 (95 % CI) of psychiatric disorders in men and women*

Diagnosis	Hierarchical			Non-hierarchical		
	Women	Men	All	Women	Men	All
Non-specific neurotic disorder*	99 (89–109)	54 (46–62)	77 (71–83)			
General anxiety disorder*	34 (28–40)	28 (24–32)	31 (27–35)	51 (45–57)	39 (33–45)	45 (41–49)
Depressive episode*	25 (21–29)	17 (13–21)	21 (19–23)	27 (23–31)	18 (14–22)	23 (21–25)
All phobias*	14 (10–18)	7 (5–9)	11 (9–13)	25 (21–29)	12 (8–16)	18 (16–20)
Obsessive–compulsive disorder*	15 (11–19)	9 (5–13)	12 (10–14)	20 (16–24)	12 (8–16)	16 (14–18)
Panic disorder*	9 (7–11)	8 (4–12)	8 (6–10)	10 (8–12)	9 (5–13)	10 (8–12)
Any neurotic disorder*	195 (181–209)	123 (113–133)	160 (150–170)			
Functional psychosis†	4 (2–6)	4 (2–6)	4 (2–6)			
Alcohol dependence†	21 (17–25)	75 (65–85)	47 (41–53)			
Drug dependence†	15 (11–19)	29 (23–35)	22 (18–26)			

* One-week prevalence.
† One-year prevalence.

conventional levels of statistical significance ($\chi^2 = 3\cdot19$, df $= 1$, $P = 0\cdot07$). However, after adjustments for the other variables, this association was no longer apparent. The main factors that explained the association were age, social class and family type.

The 1-week prevalence of the individual psychiatric disorders classified according to ICD-10 is given in (Table 7). All disorders except psychosis and drug and alcohol dependence were commoner in women than men,

although the difference for panic disorder was tiny and non-significant. As expected (Jenkins *et al.* 1997), the commonest category was that with the lowest threshold, the residual one of non-specific neurosis, which is the equivalent of the Mixed Anxiety and Depression category of ICD-10 (F41.2). Generalized anxiety disorder was the next most common neurotic disorder (31 per 1000) followed by depressive episode (21 per 1000). The prevalence of neurotic disorders is also given without the application of the

hierarchy described above. As expected, this increased the prevalence of disorders low in the hierarchy, particularly generalized anxiety disorder and phobia. It did not of course affect the residual or the total categories.

Seven hundred and forty-nine subjects were positive on the psychosis screen. Of these, 473 were successfully interviewed by psychiatric registrars using SCAN, that is, 63% of those who were positive on the psychosis screen. Forty-two of these were found to have a psychotic illness: while of the 276 who were eligible for a SCAN interview but did not have one, 13 were judged to be psychotic according to the collateral criteria described above. The prevalence of cases with a project diagnosis of psychosis was 4 per 1000. More detailed analysis of psychotic illness in the National Surveys will be given in future publications.

DISCUSSION

This large survey provides comprehensive data on the population of Great Britain resident in households. The overall prevalence of neurotic disorder was 16%; nearly half of this comprised the residual category of mixed anxiety/depression. Just over 3% of subjects had generalized anxiety disorder and 2% depressive episode. These ICD categories are similar to their equivalents in DSM-IV.

The study adopted a two-stage procedure to assess the prevalence of psychotic disorder. The performance of the screening procedure will be the subject of a later paper, but, as expected, the screen had a relatively low positive predictive value as psychosis was an uncommon condition in the sample, with an annual prevalence of 0·4%. It also proved difficult to obtain second-stage interviews, the response rate for the SCAN interviews being about 50%. For this reason, the estimate also includes 'diagnoses' of functional psychosis made on the basis of self-reported information, though this was unlikely to lead to an overestimate of prevalence, given the other limitations. Indeed, if the rate of psychosis in non-respondents was equal to that in respondents, the overall prevalence would have been 4·8 per 1000. When such procedures are used to detect disorders of low prevalence, they always create a dilemma. A proportion of screen negative individuals will actually suffer

Table 8. *Period prevalence of psychiatric disorders in selected recent surveys*

| | | | Disorder type | | | | | | | | | | | | | | |
| Site | Schizophrenia | | Major depressive disorders | | Alcohol abuse/ dependence | | Drug abuse/ dependence | | Panic disorder | | Phobic disorder | | Generalized anxiety | | Obsessive–compulsive disorder | |
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
DIS studies																
ECA (Robins & Regier, 1991)	0·9[3]	1·1[3]	1·4[3]	4·0[3]	11·9[3] 5·7[1]	2·2[3] 1·1[1]	4·1[3] 5·7[1]	1·4[3] 0·7[1]	0·4[1]	0·7[1]	4·2[1]	8·9[1]	2·4[3,5]	5·0[3,5]	1·1[1]	1·5[1]
Puerto Rico (Canino et al. 1987)	2·1[2]	1·3[2]	2·4[2]	3·3[2]	5·3[2]	0·4[2]	NA		1·2[2]	0·9[2]	4·1[2]	8·2[2]	NA		1·3[2]	2·3[2]
Edmonton (Bland et al. 1988)	0·4[2]	0·2[2]	2·5[2]	3·9[2]	9·2[2]	1·6[2]	2·8[2]	0·6[2]	0·4[2]	1·0[2]	3·5[2]	6·7[2]	NA		1·6[2]	1·6[2]
Christchurch (Oakley-Browne et al. 1989)		0·2[2]	3·4[2]	7·1[2]	14·1[2]	2·6[2]	2·3[2]	0·7[2]	1·7[2]	6·9[2]	4·4[2]	10·4[2]	7·7[2,5]	11·6[2,5]	0·6[2]	1·4[2]
Taipei (Hwu et al. 1989)		0·3[2]		0·6[3]		1·3[3]		0·06[3]		0·2[3]		2·5[3]		3·4[3,5]		0·3[3]
Munich (Wittchen et al. 1992)[6]		0·7[2]	3·0[2]		1·2[2]		0·6[2]		1·1[2]		NA		NA		1·8[2]	
UM-CIDI																
NCS (Kessler et al. 1994)[7]	0·5[3,8]	0·6[3,8]	7·7[3]	12·9[3]	14·1[3]	5·3[3]	5·1[3]	2·2[3]	1·3[3]	3·2[3]	NA		2·0[3]	4·3[3]	NA	
Current study	0·4[3,9]	0·4[3,9]	1·8[4]	2·7[4]	7·5[3]	2·1[3]	2·9[3]	1·5[3]	0·9[4]	1·0[4]	1·2[4]	2·5[4]	3·9[4]	5·1[4]	1·2[4]	2·0[4]

[1] One-month prevalence; [2] 6-month prevalence; [3] 1-year prevalence; [4] 1-week prevalence; [5] no other DSM-III disorder; [6] age 26–64; [7] age 15–54; [8] non-affective psychoses; [9] all psychoses.

from the disorder, although if the screen is a good one it will be a very small proportion. Nevertheless, the numbers of cases omitted may contribute significantly to overall prevalence. Thus, the counsel of perfection would be to examine a proportion of screen-negative individuals. This is, however, very costly, particularly if sufficient screen-negative individuals are interviewed to restrict confidence limits to acceptable levels. In the end we opted only to re-interview screen-positive individuals, accepting that this again leads to an underestimate of prevalence of the screen negative prevalence. Given this procedure, the second-stage interviewers could not be blind to the fact that the people they were seeing were PSQ positive. However, they knew that there would be an excess of subjects with no psychotic disorder, so the resulting bias was less than might be argued. One cannot, therefore, be fully confident about the accuracy of the prevalence rate for psychosis, though it is difficult to envisage an alternative methodology that would provide a more convincing estimate.

The central methodological problems besetting community psychiatric surveys concern the threshold for recognizing disorder and the reliability of case-finding. Relatively small shifts in threshold lead to appreciable changes in prevalence as cases in the community will tend to cluster around the threshold. In contrast to the position a quarter of a century ago (Silverman, 1968; Dohrenwend & Dohrenwend, 1974), the last 10 years have seen the publication of surveys with variations in prevalence small enough to be attributable to demographic and cultural differences.

This is apparent in the comparative data presented in Table 8, which includes those studies based on the DIS that provide values for period prevalence, together with results from the National Comorbidity Survey. The prevalences relate to categories of disorder approximate to those covered in the present survey. There are particularly high rates in Christchurch and low rates in Taipei for affective disorder and anxiety states, and this raises the question of whether they represent real differences, or some local oddity of administration of the DIS. The ECA studies and the Puerto Rico survey obtained high rates for schizophrenia.

Nevertheless, the DIS studies display reasonably close agreement, especially when it is considered that the populations are not standardized for demographic factors like age, and there is no consistency in the choice of period for reporting prevalence.

The results from the NCS are of particular interest since they are based on the University of Michigan version of the CIDI (UM-CIDI), which represents a further development from the DIS. The values for major depressive disorder and panic disorder are appreciably higher than in the DIS studies. On the other hand, the prevalence of non-affective psychosis is low: unlike the other diagnoses, this was based on subjects identified as having psychotic symptoms with the UM-CIDI being re-interviewed by clinicians using the SCID (Kendler *et al.* 1996). This result is of interest in that it is close to the value we obtained in the current survey using an equivalent two-stage case identification procedure.

Although the NCS and the current study are based on national samples, the prevalences reported here are closer to those obtained in the ECA surveys. This raises the issue of the translatability of CIDI and the instruments used in the current study. There is at the very least a requirement for investigation and for this reason we are currently conducting a study comparing the results of using the CIS-R, CIDI and SCAN in individual members of the general population (Brugha *et al.* 1997*b*).

In Table 8, we have included prevalences from the current study based on non-hierarchical ICD-10 diagnosis for ease of comparison. The prevalences for non-psychotic disorder are based on a shorter period (1 week) than the other surveys and this would somewhat reduce prevalence relative to their results. The use of more restricted definitions of anxiety disorders in ICD-10 compared to DSM-III and DSM-III-R may also be a factor, phobia being the most noteworthy example. Nevertheless, the values are commensurate with the DIS and CIDI surveys. It is likely that the relatively high rates of obsessive–compulsive disorder seen both here and in the other surveys correspond to a high prevalence of relatively trivial obsessive–compulsive symptoms, rather than indicating that the severe disorders seen by psychiatrists in clinical practice are common in the community.

We cannot of course assume that, because we

have instruments that provide reasonably consistent results for populations, they will necessarily identify individual cases in a consistent way. There is likely to be disagreement both when two people use the same instrument and when one person uses different instruments (Dean *et al.* 1983; Bebbington *et al.* 1984) or a substantially modified version of an instrument (Kessler *et al.* 1994). Despite this, the results from the community surveys can be useful in estimating the likely burden of these disorders in the population and thus for providing indirect evidence of needs for treatment. This was a major purpose both of the ECA studies (Eaton *et al.* 1981) and of the current survey.

Our findings concerning associations between psychiatric disorder and sociodemographic variables are readily comparable with those from other surveys. Psychiatric disorders were commoner in women (odds ratio 1·72), and this is an almost universal finding, although the explanation is unclear (Bebbington *et al.* 1981*a*; Jenkins 1985; Wolk & Weissman, 1995). The peak prevalence of disorders lay between 25 and 54 years. In this study, it declined appreciably after the age of 55, as did the sex ratio (Bebbington *et al.* 1996). This decline is also seen in clinical cases (Bebbington, 1988).

In general, high risk groups correlate with likely social disadvantage. Those at increased risk include the divorced or separated (OR 1·77) and the widowed (OR 1·51). High rates of neurotic disorder are consistently found in these groups (Cox *et al.* 1987; Robins & Regier, 1991, p. 354; Bebbington, 1991). Lone parents (OR 1·74) and those in single person households (OR 1·64) also have high rates. The problems besetting lone parents are manifold and the psychiatric consequences of the recent secular increases in their numbers have been well considered by Kramer and his colleagues (1987). A social class gradient, with those in the highest social class having the lowest prevalence, was still present after adjustment though this was a relatively weak relationship. An increased prevalence of psychiatric disorder in lower socioeconomic groups is consistently reported (Cox *et al.* 1987; Robins & Regier, 1991; Stansfeld & Marmot, 1992).

The unemployed have a considerably increased prevalence (OR 2·39), as do the economically inactive, though this group is hetero-

genous, including as it does housewives, students and the permanently sick and disabled. The association between unemployment and psychiatric disorder has been well documented before, and longitudinal studies suggest the link is causal (see review by Warr, 1987). Its replication in the current study requires little comment.

The prevalence of disorder in the relatively affluent south of England was little different from that in the North, Scotland or Wales, although this survey was carried out in a rare period when unemployment rates in different regions of Britain were much closer than usual. However, there was a strong relationship between living in urban areas and psychiatric morbidity (OR 1·41). There is supporting evidence from both the DIS studies and the UK Health and Lifestyle survey suggesting a higher prevalence of psychiatric disorder in urban areas (Blazer *et al.* 1985; Hwu *et al.* 1989; Lewis & Booth, 1994), although this is not an invariable finding (Canino *et al.* 1987; Lee *et al.* 1990*b*; Kessler *et al.* 1994).

Just as lone parents as a group face great social disadvantage, so do those from ethnic minorities. Because it was nationwide, this study lacked power to study ethnic group differences. There was, nevertheless, an appreciable excess of neurotic disorder in Black respondents. However, unlike the other associations described above, it was of particular interest that this could be explained by other variables, specifically age, family type and social class. The increased rate of psychosis in Black British people is a consistent finding (McGovern & Cope, 1987; Harrison *et al.* 1988). However, previous studies have not suggested especially high rates of neurotic disorder (Bebbington *et al.* 1981*b*).

The current survey thus provides an account of the significance of these sociodemographic factors for the British population. Another way of estimating the importance of potential risk factors for disease is by using the population attributable fraction (PAF) or 'aetiologic fraction' (Walter, 1976; Last, 1988). This gives the proportion of cases that can be explained by a factor, assuming a causal relationship and that all confounding has been accounted for. Using this approach, the PAF for urban life is 14·5%, for separated and divorced persons 5·2%, for lone parents 5·4% and for unemployment

10·7%. Such calculations provide important information for policy on the psychiatric services.

The Household Survey had a good response rate of 80% and the fieldwork was carried out by well-trained and experienced social survey interviewers subject to tight quality control. The advantages of using the highly structured Revised Clinical Interview Schedule have been discussed elsewhere (Lewis *et al.* 1992; Jenkins *et al.* 1997) but it is worth emphasizing that identical questions were asked of all the subjects, in approximately the same way by this highly trained group of interviewers. The sample was large and the sampling procedure was effective. One can have confidence, therefore, that these results are generalizable to the study population of Great Britain, excluding the Highlands and Islands.

Previously the provision of services in Britain has been based on extrapolation from scanty information of dubious and unascertainable validity. For the first time we have data on the prevalence and correlates of psychiatric disorder based on a nationwide sample that can be used to inform equitable and effective psychiatric services. Equally important are the public health implications. We have defined groups at particular risk of psychiatric morbidity, and in doing so have identified potential objectives of social policy.

REFERENCES

American Psychiatric Association (1980). *Diagnostic and Statistic Manual of Mental Disorders*, 3rd edn. American Psychiatric Association: Washington, DC.

American Psychiatric Association (1987). *Diagnostic and Statistical Manual of Mental Disorders*, 3rd edn, Revised. American Psychiatric Association: Washington, DC.

Bebbington, P. E. (1988). The social epidemiology of clinical depression. In *Handbook of Studies on Social Psychiatry* (ed. A. S. Henderson and G. Burrows), pp. 88–102. Elsevier: Amsterdam.

Bebbington, P. E. (1991). The epidemiology of affective disorders. In *Social Psychiatry: Theory, Methodology and Practice* (ed. P. E. Bebbington), pp. 265–304. Transaction: New Brunswick, NJ.

Bebbington, P. E. & Nayani, T. (1995). The psychosis screening questionnaire. *International Journal of Methods in Psychiatric Research* **5**, 11–20.

Bebbington, P. E., Hurry, J., Tennant, C., Sturt, E. & Wing, J. K. (1981*a*). The epidemiology of mental disorders in Camberwell. *Psychological Medicine* **11**, 561–580.

Bebbington, P. E., Hurry, J. & Tennant, C. (1981*b*). Psychiatric disorders in selected immigrant groups in Camberwell. *Social Psychiatry* **16**, 43–51.

Bebbington, P. E., Sturt, E., Tennant, C. & Hurry, J. (1984). Misfortune and resilience: a community study of women. *Psychological Medicine* **14**, 347–364.

Bebbington, P. E., Jenkins, R., Lewis, G., Brugha, T., Farrell, M. & Meltzer, H. (1997). The influence of age and sex on the prevalence of depressive conditions: report from the National Survey of Psychiatric Morbidity. *Psychological Medicine* **27** (in the press).

Bland, R. D., Orn, H. & Newman, S. C. (1988). Lifetime prevalence of psychiatric disorders in Edmonton. *Acta Psychiatrica Scandinavica* **77** (suppl 338), 24–32.

Blazer, D., George, L. K., Landerman, R., Pennybacker, M., Melville, M. L., Woodbury, M., Manton, K. G., Jordan, K. & Locke, B. Z. (1985). Psychiatric disorders: a rural/urban comparison. *Archives of General Psychiatry* **42**, 651–656.

Brown, G. W. & Harris, T. (1978). *Social Origins of Depression: A Study of Psychiatric Disorders in Women*. Tavistock: London.

Brugha, T. S., Sharp, H. M., Cooper, S. A., Shirkwin, R., Britto, D., Sherif, T. & Kirwan, P. (1997*a*). The Leicester 500 project. Social support and the development of depressive symptoms, a prospective cohort survey. *Psychological Medicine* (in the press.)

Brugha, T. S., Jenkins, R., Bebbington, P. E., Vernon, J., Janas, M. & Taub, N. (1997*b*). A comparison of SCAN, CIDI and CIS-R in a household sample. (In preparation.)

Canino, G. J., Bird, H. R., Shrout, P. E., Rubio-Stipec, M., Bravo, M., Martinez, R., Sesman, M. & Guevara, L. M. (1987). The prevalence of specific psychiatric disorders in Puerto Rico. *Archives of General Psychiatry* **44**, 727–735.

Carta, M. G., Carpiniello, B., Morosini, P. L. & Rudas, N. (1991). Prevalence of mental disorders in Sardinia: a community study in an inland mining district. *Psychological Medicine* **21**, 1061–1071.

Clark, V. A., Aneshensel, C. S., Frerichs, R. R. & Morgan, T. M. (1983). Analysis of non-response in a prospective study of depression in Los Angeles County. *International Journal of Epidemiology* **12**, 193–198.

Costello, C. G. (1982). Social factors associated with depression: a retrospective community study. *Psychological Medicine* **12**, 329–339.

Cox, B. D., Blaxter, M., Buckle, A. L. J., Fenner, N. P., Golding, J. F., Gore, M., Huppert, F. A., Nickson, J., Roth, M., Stark, J., Wadsworth, M. E. J. & Whichelow, M. (1987). *The Health and Lifestyle Survey*. Health Promotion Research Trust: Cambridge.

Dean, C., Surtees, P. G. & Sashidharan, S. P. (1983). Comparison of research diagnostic systems in an Edinburgh community sample. *British Journal of Psychiatry* **142**, 247–250.

Dohrenwend, B. P. & Dohrenwend, B. S. (1974). Social and cultural influences on psychopathology. *Annual Review of Psychiatry* **25**, 417–452.

Dohrenwend, B. P. & Dohrenwend, B. S. (1982). Perspectives on the past and future of psychiatric epidemiology. *American Journal of Public Health* **72**, 1271–1279.

Eaton, W. W. & Kessler, L. G. (1985). *Epidemiologic Field Methods in Psychiatry: The NIMH Epidemiologic Catchment Area Program*. Academic Press: Orlando, FL.

Eaton, W. W., Regier, D. A., Locke, B. Z. & Taube, C. A. (1981). The NIMH epidemiologic catchment area program. In *What is a Case? The Problem of Definition in Psychiatric Community Surveys*

(ed. J. K. Wing, P. E. Bebbington and L. Robins), pp. 99–106. Grant MacIntyre: London.

Endicott, J. & Spitzer, R. (1978). A diagnostic interview: the Schedule for Affective Disorders and schizophrenia. *Archives of General Psychiatry* **35**, 837–844.

Harrison, G., Owens, D., Holton, A., Neilson, D. & Boot, D. (1988). A prospective study of severe mental disorder in Afro-Caribbean patients. *Psychological Medicine* **18**, 643–657.

Henderson, A. S., Byrne, D. G. & Duncan-Jones, P. (1981). *Neurosis and the Social Environment*. Academic Press: Sydney.

Hilton, M. E. (1991). A note on measuring drinking problems in the 1984 National Alcohol Survey. In *Alcohol in America: Drinking Practices and Problems* (ed. W. B. Clark and M. E. Hilton), pp. 51–70. State University of New York Press: Albany, NY.

Hodiamont, P., Peer, N. & Syben, N. (1987). Epidemiological aspects of psychiatric disorder in a Dutch Health Area. *Psychological Medicine* **17**, 495–506.

Hollifield, M., Katon, W., Spain, D. & Pule, L. (1990). Anxiety and depression in a village in Lesotho, Africa: a comparison with the United States. *British Journal of Psychiatry* **156**, 343–350.

Huber, P. J. (1967). The behaviour of maximum likelihood estimates under non-standard conditions. *Proceedings of the Fifth Berkeley Symposium on Mathematical Statistics and Probability* **1**, 221–233.

Hwu, H. G., Yeh, E. K. & Chang, L. Y. (1989). Prevalence of psychiatric disorders in Taiwan defined by the Chinese Diagnostic Interview Schedule. *Acta Psychiatrica Scandinavica* **79**, 136–147.

Jenkins, R. (1985). *Sex Differences in Minor Psychiatric Morbidity*. Monograph Supplement No 7. *Psychological Medicine*. Cambridge University Press: Cambridge.

Jenkins, R., Bebbington, P., Brugha, T., Farrell, M., Gill, B., Lewis, G., Meltzer, H. & Petticrew, M. (1997). The National Psychiatric Morbidity Surveys of Great Britain – strategies and methods. *Psychological Medicine* **27**, 765–774.

Karam, E. (1991). War events and depression in Lebanon. Paper presented at a seminar of the International Traumatic Stress Society, Washington, DC.

Kendler, K. S., Gallagher, T. J., Abelson, J. & Kessler, R. C. (1996). Lifetime prevalence, demographic risk factors and diagnostic validity of nonaffective psychosis as assessed in a US community sample: The National Comorbidity Survey. *Archives of General Psychiatry* **53**, 1022–1031.

Kessler, R. C., McGonagle, K. A., Swartz, M., Blazer, D. G. & Nelson, C. B. (1993). Sex and depression in the National Comorbidity Survey. I. Lifetime prevalence, chronicity and recurrence. *Journal of Affective Disorders* **29**, 85–96.

Kessler, R. C., McGonagle, K. A., Zhao, S., Nelson, C. B., Hughes, M., Eshleman, S., Wittchen, H.-U. & Kendler, K. S. (1994). Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States. *Archives of General Psychiatry* **51**, 8–19.

Kish, L. (1965) *Survey Sampling*. Wiley: London.

Kramer, M., Brown, H., Skinner, M., Anthony, J. & German, P. (1987). Changing living arrangements in the population and their potential effect on the prevalence of mental disorder: findings of the East Baltimore mental health survey. In *Psychiatric Epidemiology: Progress and Prospects* (ed. B. Cooper), pp. 3–26. Croom Helm: London.

Last, J. (1988). *A Dictionary of Epidemiology*, 2nd edn. Oxford University Press: New York.

Lee, C. K., Kwak, Y. S., Yamamoto, J., Rhee, H., Kim, Y. S., Han, J. H., Choi, J. O. & Lee, Y. H. (1990*a*). Psychiatric epidemiology in Korea, part I: gender and age differences in Seoul. *Journal of Nervous and Mental Disease* **178**, 242–246.

Lee, C. K., Kwak, Y. S., Yamamoto, J., Rhee, H., Kim, Y. S., Han, J. H., Choi, J. O. & Lee, Y. H. (1990*b*). Psychiatric epidemiology in Korea, part II: urban and rural differences. *Journal of Nervous and Mental Disease* **178**, 247–252.

Lehtinen, V., Lindholm, T., Veijola, J. & Vaisanen, E. (1990). The prevalence of PSE-CATEGO disorders in a Finnish adult

population cohort. *Social Psychiatry and Psychiatric Epidemiology* **25**, 187–192.

Leighton, D. C., Harding, J. S., Macklin, D. B., MacMillan, A. M. & Leighton, A. H. (1963). *The Character of Danger Stirling County Study*, vol. 3. Basic Books: New York.

Lepine, J. P., Lellouch, J., Lovell, A. *et al.* (1989). Anxiety and depressive disorders in a French population: methodology and preliminary results. *Psychiatrie et Psychobiologie* **2**, 267–274.

Lewis, G. & Booth, M. (1994). Are cities bad for your mental health? *Psychological Medicine* **24**, 913–916.

Lewis, G., Pelosi, A. J., Araya, R. & Dunn, G. (1992). Measuring psychiatric disorder in the community: a standardized assessment for use by lay interviewers. *Psychological Medicine* **22**, 465–486.

McConnell, P., McClelland, R., Gillespie, K., Bebbington, P. E. & Houghton, S. (1996). The Derry Survey. Needs for psychiatric care in Northern Ireland's second city. (Personal communication.)

McGovern, D. & Cope, R. V. (1987). First psychiatric admission rates of first and second generation Afro-Caribbeans. *Social Psychiatry* **22**, 139–149.

Mavreas, V. G., Beis, A., Mouyias, A., Rigoni, F. & Lyketsos, G. C. (1986). Prevalence of psychiatric disorder in Athens: a community study. *Social Psychiatry* **21**, 172–181.

Mavreas, V. & Bebbington, P. E. (1987). Psychiatric morbidity in London's Greek Cypriot community. I. Association with socio-demographic variables. *Social Psychiatry* **22**, 150–159.

Meltzer, H., Gill, B. & Petticrew, M. (1995). *OPCS Surveys of Psychiatric Morbidity in Great Britain. Report No 1. The Prevalence of Psychiatric Morbidity among Adults aged 16–64 Living in Private Households in Great Britain*. HMSO: London.

Oakley-Browne, M. A., Joyce, P. R., Wells, J. E., Bushnell, J. A. & Hornblow, A. R. (1989). Christchurch Psychiatric Epidemiology Study, Part I: six month and other period prevalences of specific psychiatric disorders. *Australian and New Zealand Journal of Psychiatry* **23**, 327–340.

Office of Population Censuses and Surveys (1990). *Standard Occupational Classification, Vol. 1*. HMSO: London.

Orley, J. & Wing, J. K. (1979). Psychiatric disorders in two African villages. *Archives of General Psychiatry* **36**, 513–520.

Robins, L. N. & Regier, D. A. (1991). *Psychiatric Disorders in America: The Epidemiologic Catchment Area Study*. Free Press: New York.

Robins, L. N., Hezler, J. E. & Croughan, J. L. (1981). The NIMH Diagnostic Interview Schedule: its history, characteristics and validity. *Archives of General Psychiatry* **39**, 381–389.

Robins, L. N., Hezler, J. E., Orvaschel, H., Anthony, J. C., Blazer, D. G., Burnham, A. & Burke, J. D. (1985). The Diagnostic Interview Schedule. In *Epidemiologic Field Methods in Psychiatry: The NIMH Epidemiologic Catchment Area Program* (ed. W. W. Eaton and L. G. Kessler), pp. 143–168. Academic Press: Orlando, FL.

Robins, L. N., Wing, J. K., Wittchen, H.-U., Hezler, J. E., Babor, T. F., Burke, J. D., Farmer, A., Jablensky, A., Pickens, R., Regier, D. A., Sartorius, N. & Towle, L. H. (1988). The Composite International Diagnostic Interview. *Archives of General Psychiatry* **45**, 1069–1077.

Romans-Clarkson, S. E., Walton, V. A., Herbison, G. P. & Mullen, P. E. (1988). Marriage, motherhood and psychiatric morbidity in New Zealand. *Psychological Medicine* **18**, 983–990.

Roth, W. F. & Luton, F. H. (1942). The mental health program in Tennessee. *American Journal of Psychiatry* **99**, 662–675.

Silverman, C. (1968). *Epidemiology of Depression*. Johns Hopkins University Press: Baltimore.

Sjögren, T. (1948). *Genetic-statistical and Psychiatric Investigations of a West Swedish Population. Acta Psychiatrica et Neurolologica,, Suppl 52*.

Srole, L., Langner, T., Michael, S. T., Opler, M. K. & Rennie, T. A. C. (1962). *Mental Health in the Metropolis*. McGraw-Hill: New York.

Stansfeld, S. A. & Marmot, M. G. (1992). Social class and minor psychiatric disorder in civil servants: a validated screening survey

using the General Health Questionnaire. *Psychological Medicine* **22**, 739–749.

Stata Corporation (1995). *Stata Version 4.0*. Stata Corporation: College Station, Texas.

Strömgren, E. (1938). *Beiträge zur psychiatrischen Erblehre*. Munksgaard: Copenhagen.

Sturt, E., Bebbington, P. E., Hurry, J. & Tennant, C. (1981). The Present State Examination used by interviewers from a survey agency: report from the Camberwell Community Survey. *Psychological Medicine* **11**, 185–192.

Surtees, P. G., Dean, C., Ingham, J. G., Kreitman, N. B., Miller, P. M. & Sashidharan, S. P. (1983). Psychiatric disorder in women from an Edinburgh community: associations with demographic factors. *British Journal of Psychiatry* **142**, 238–246.

Vázquez-Barquero, J. L., Diez-Manrique, J. F., Pena, C., Aldana, J., Samaniego-Rodriguez, C., Menendez-Arango, J. & Mirapeix, C. (1987). A community mental health survey in Cantabria: a general description of morbidity. *Psychological Medicine* **17**, 227–242.

Vázquez-Barquero, J. L., Garcia, J., Artal Simôn, J., Iglesias, C., Montejo, J. & Dunn, G. (1996). Mental health in primary care: an epidemiological study of morbidity and utilization of health resources. (Personal communication.)

Walter, S. D. (1976). The estimation and interpretation of attributable risk in health research. *Biometrics* **32**, 829–849.

Warr, P. (1987). *Work, Unemployment and Mental Health*. Oxford Science Publications: Oxford.

Weissman, M. M. & Myers, J. (1978). Rates and risks of depressive symptoms in a United States urban community. *Acta Psychiatrica Scandinavica* **57**, 219–231.

Weissman, M. M., Leaf, P. J., Tischler, G. L., Blazer, D. G., Karno, M., Bruce, M. L. & Flomo, L. P. (1988). Affective disorders in five United States communities. *Psychological Medicine* **18**, 141–153.

Wells, J. E., Bushnell, J. A., Hornblow, A. R., Joyce, P. R. & Oakley-Browne, M. A. (1989). Christchurch Psychiatric Epidemiology Study Part I: Methodology and lifetime prevalence for specific psychiatric disorders. *Australian and New Zealand Journal of Psychiatry* **23**, 315–326.

Williams, P. & Macdonald, A. (1986). The effect of non-response bias on the results of two-stage screening surveys of psychiatric disorder. *Social Psychiatry* **21**, 182–186.

Wing, J. K. & Sturt, E. (1978). *The PSE-ID-CATEGO System: A Supplementary Manual*. Institute of Psychiatry: London.

Wing, J. K., Cooper, J. E. & Sartorius, N. (1974). *The Measurement and Classification of Psychiatric Symptoms*. Cambridge University Press: London.

Wing, J. K., Bebbington, P. E. & Robins, L. N. (1981). Theory testing in psychiatric epidemiology. In *What is a Case? The Problem of Definition in Psychiatric Community Surveys* (ed. J. K. Wing, P. E. Bebbington and L. N. Robins), pp. 1–8. Grant MacIntyre: London.

Wing, J. K., Babor, T., Brugha, T., Burke, J., Cooper, J. E., Giel, R., Jablensky, A., Regier, R. & Sartorius, N. (1990). SCAN: Schedules for Clinical Assessment in Neuropsychiatry. *Archives of General Psychiatry* **47**, 589–593.

Wittchen, H.-U., Esau, C. A., von Zerssen, D., Kreig, J. C. & Zaudig, M. (1992). Lifetime and six-month prevalence of mental disorders: the Munich follow-up study. *European Archives of Psychiatry and Clinical Neuroscience* **241**, 247–258.

Wolk, S. I. & Weissman, M. M. (1995). Women and depression. In *Review of Psychiatry*, Vol. 14 (ed. J. M. Oldham and M. B. Riba), pp. 227–259. American Psychiatric Press: Washington, DC.

World Health Organization (1978). *Mental Disorders: Glossary and Guide to Their Classification in Accordance with the Ninth Revision of the International Classification of Diseases*. WHO: Geneva.

World Health Organization (1992). *SCAN* (*Schedules for Clinical Assessment in Neuropsychiatry*). World Health Organization: Geneva.

World Health Organization (1994). *SCAN* (*Schedules for Clinical Assessment in Neuropsychiatry*). *Version 2*. World Health Organization: Geneva.