Brit. J. Psychiat. (1983), **142,** 238–246

Psychiatric Disorder in Women from an Edinburgh Community: Associations with Demographic Factors

P. G. SURTEES, C. DEAN, J. G. INGHAM, N. B. KREITMAN, P. McC. MILLER AND S. P. SASHIDHARAN

Summary: The prevalence of psychiatric disorder was determined according to alternative diagnostic criteria in a random sample of 576 women from an Edinburgh community. Whichever diagnostic system was applied, significantly higher rates of disorder were found among the working class, the unemployed and women who were divorced, widowed, separated or cohabiting; in the subgroup of women who met all these conditions, up to half were found to satisfy the diagnostic criteria. The observed prevalence estimates can be explained as the effects of each demographic factor acting independently, no interaction effects being needed. Our results are discussed in relation to the findings of others, and in terms of the statistical issues involved.

This paper is the first report of a community study in Edinburgh on psychiatric disorder in women. The study has a number of broad objectives:

1. To estimate the prevalence of psychiatric disorder as defined by different diagnostic criteria and to examine the associations of these disorders with demographic factors. This is the topic of this paper and another (Dean *et al*).

2. To identify factors determining entry into different levels of care.

3. To test aetiological hypotheses relating psychosocial factors to psychological distress.

Over the last two decades there has been an increasing emphasis on using standardized interviews and their allied diagnostic procedures to improve the reliability of psychiatric diagnosis. Two interviews now in widespread use are the Present State Examination (PSE) allied to the Index of Definition (ID) and CATEGO computer procedures developed by Wing and colleagues (Wing *et al*, 1974; Wing and Sturt, 1978), and the Schedule for Affective Disorders and Schizophrenia (SADS) to which Research Diagnostic Criteria (RDC) can be applied (Spitzer *et al*, 1978). The development of these systems has enabled advances to be made in social and epidemiological psychiatry, but comparison between studies which have used the different systems remains difficult. This problem is now being recognized. Eastwood (1981) indicated that comparisons between PSE- and SADS-based case-rates were only superficially similar. This was because the interviews themselves covered different sets of symptoms, and where symptoms were the same they were rated according to different (usually time-based) criteria. In addition, the diagnostic rules applied to data provided by the two interviews differed.

We have developed an interview procedure which allows analysis by alternative diagnostic criteria and consequent comparisons both of overall case rates and of particular diagnoses as determined by each system. Such comparisons are presented in a further paper (Dean *et al*).

This report is concerned with examining the relationships between four demographic factors (age, social class, marital and employment status) and estimates of prevalence of psychiatric disorder in women, according to different diagnostic criteria. By using alternative diagnostic criteria within the same study, we have been able to investigate the extent to which their use explains the conflicting results obtained in other community surveys studying demographic factors.

Previous studies

Large community studies in New Haven (Hollingshead and Redlich, 1958) and in New York City (Srole *et al*, 1962; Langner and Michael, 1963) found a high prevalence of affective symptoms in the lower social classes. This finding proved to be consistent with later studies using a general measure of affective morbidity (Warheit *et al*, 1973; Uhlenhuth *et al*, 1974) and a review of 44 studies by Dohrenwend

and Dohrenwend (1969) came to the same conclusion. Over the same period, hospital-based studies using stricter diagnostic criteria found that depression was commoner among the middle and upper socio-economic classes (Faris and Dunham, 1939; Noyes and Kolb 1958; Woodruff *et al*, 1971) although Bagley's extensive review (1973) suggested that only certain subtypes of manic-depressive illness showed this relationship.

More recent epidemiological studies have produced conflicting results. Three large-scale surveys using diagnostic measures of affective morbidity have been carried out in the last four years. Brown and Harris (1978) used the PSE to obtain symptom information which was then subject to their own case-definition procedures (e.g. see Finlay-Jones *et al*, 1980). Their results showed that 22.9 per cent of the working-class women had an onset of disorder within three months of interview compared to 6.4 per cent of the middle-class women. A study undertaken in New Haven by Weissman and Myers (1978a, 1978b, 1980) using the SADS-RDC system also obtained higher rates of disorder in the lower (mixed-sex) socio-economic groups. The relationship with minor depression was the more striking ($P = <.01$); the rates for major depression, although higher in the lower-class group, did not reach statistical significance. Bebbington *et al* (1981) failed to find any significant difference in rates of morbidity between social classes when using the PSE-ID system to measure mental health in women in a community survey in Camberwell, London.

Design and Method

Selection of sample

To select the necessary study area we examined the percentage rates of male manual workers in the 30 regional electoral divisions of Edinburgh (Buglass *et al*, 1980) on the assumption that these areas were likely to have a corresponding proportion of working-class women. Of the eleven divisions with the highest rates of male manual workers we excluded two which represent atypical problem areas and have been frequently researched, and two more which we had used for a preliminary study in 1980. The other seven divisions, which were all included in the final study area, are all located in or directly adjoining the North Edinburgh and Leith constituencies.

The geographically discrete area finally chosen for study (Fig 1) comprises 12 regional electoral divisions and includes two that are predominantly middle-class. At the time of the 1971 census the chosen area had a total female population of more than 91,000.

The study was restricted to women aged 18-65 years, the total eligible population being estimated at just over 53,000 (57.8 per cent of the female and 30.9 per cent of the total population from the chosen area). A random sample was generated by using electoral registration numbers and the names and addresses of females obtained by comparing the numbers with the register. Males were discarded when identified. If the woman nominated had moved house since electoral registration and at least one new eligible female voter had moved into the household, or if the nominated respondent was found ineligible on the basis of sex or age, then a Kish (1965) procedure was used to select a respondent from all eligible females.

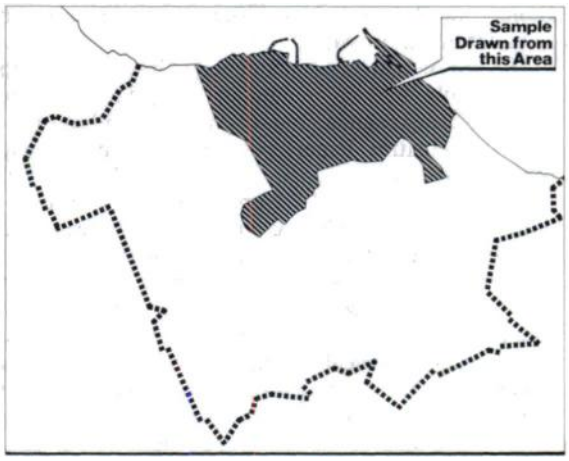

FIG 1.—North-East quadrant of Edinburgh showing the area of study.

Selection and training of interviewers

The study design had three stages: the first stage was cross-sectional whilst the second and third stages obtained re-interview information on a sub-sample six months and one year later. This report is concerned entirely with results obtained from the first stage.

A team of 22 female interviewers was recruited and given six weeks' training. Fifteen had a formal qualification in either social work, marriage guidance counselling, nursing or teaching while the remainder were experienced market research interviewers. Only three interviewers had less than two years' interviewing experience.

Four tutors (three psychiatrists and a clinical psychologist) trained the interviewers in the use and administration of the Psychiatric Assessment Schedule (PAS). This interview was devised specifically for this research, and comprised the first 40 questions and some of the behavioural items of the PSE, together with additional questions derived from the SADS. (All the tutors were trained on the use of the PSE. Training materials for the SADS-RDC system, including case vignettes and a videotape, were obtained from the

Biometrics Research Unit, New York, in order to acquaint the tutors with the RDC).

The PSE was originally designed to be administered by clinically trained personnel, but there is now evidence that social survey interviewers without previous psychiatric experience can be successfully trained on its use (Cooper *et al,* 1977; Wing *et al,* 1977a). Weissman and Myers (1980) have also reported that non-clinical interviewers can be successfully taught how to administer the SADS.

In training, emphasis was placed on how to conduct a clinical interview, on acquainting trainees with common psychiatric conditions, and on distinguishing between psychological symptoms and rating them in a reliable way. The training programme was divided into five stages extending over a six-week period. During the first two stages, trainees were taught how to rate symptoms reliably using videotaped interviews in a seminar setting. Next, they were divided into groups of five or six, and each trainee in turn interviewed a hospital psychiatric in-patient. All the trainees made ratings in each session, after which they were discussed with the tutor. The next two stages involved each trainee completing six interviews, three of which were supervised by a tutor. All these interviews were undertaken in a community setting. Finally, all trainees completed PAS ratings of two videotapes made by one of the tutors and two audiotapes. Their ratings were then checked against consensus ratings agreed between the tutors. As a result, 18 of the trainees were allowed to proceed to the study immediately, while three did so after gaining additional interview experience. One interviewer did not complete the extra training satisfactorily and left the team without taking part in the survey.

Validation of interviewers' findings

After the formal training was completed, trained interviewers began the survey. With each respondent's permission, the section of the interview covering psychiatric state was always tape-recorded. For 10 per cent of the sample the entire interview was recorded to assess its reliability, and the first few interviews completed by each interviewer were also recorded in their entirety and checked by the tutors. All PAS schedules were examined by MRC staff shortly after they had been completed to check for any evidence of a current episode of illness. If such evidence was found the interviewer's symptom ratings were computer-analysed to provide both an ID level and an RDC diagnosis. If the ratings met the case requirements of either the RDC or the CATEGO system, the tape of the interview was listened to and rated by one of the three staff raters. In this way all cases resulting from interviewers' ratings were re-rated by trained staff.

Consensus ratings were then determined by joint discussion between interviewer and staff rater. Rarely, i.e. where no tape was available, the interviewer was asked to describe and substantiate ratings made. These consensus ratings provided the basis upon which the current mental state assessment was determined and classified for the purpose of subsequent analysis.

In addition to re-rating interviewer audiotapes, the three staff raters undertook a separate inter-rater reliability study of a representative sample of 30 cases (ID and/or RDC) resulting from interviewer ratings. Suitable descriptive indices of the agreement between raters have been suggested by Cohen (1960), and have been applied to determining agreement on the presence or absence of a diagnosable psychiatric condition by Wing *et al* (1977b). Similar analysis of our data for agreement on the presence of an ID- and/or RDC-diagnosable condition produced no associations below 0.70 for any pair of staff raters, and suggested, by comparison with other studies (e.g. Sturt *et al,* 1981) that a satisfactory level of agreement had been achieved.

Results

Response

As shown in Table I, 27 per cent of those eligible respondents contacted refused interview. While this figure is high, it closely resembles those obtained by others in similar surveys of this nature (e.g. Bebbington *et al,* 1981). However, a refusal rate of this order could result in considerable bias. To test this possibility, two checks were carried out. The first comprised dividing the total sample into three; those individuals who could not be traced, those who refused

TABLE I

Contact, response and refusal rates

		n	%
a	Address empty, no information available	38	3.22
b	Dead, aged over 65, or male (not replaced)	106	8.99
c	Too ill (not replaced)	11	0.93
d	Moved (not replaced)	87	7.38
e	Replaced	95	8.06
f	Door not opened, out, or away	50	4.24
g	Refusals	215	18.24
h	Interview obtained	577	48.94
	Total	1179	100.00

Contact rate = (g+h)÷(Total−b) = 73.8%
Response rate = h÷(f+g+h) = 68.5%
Refusal rate = g÷(g+h) = 27.1%

https://doi.org/10.1192/bjp.142.3.238 Published online by Cambridge University Press

to participate and those who were interviewed. These lists were then checked against the Edinburgh Psychiatric Case Register (EPCR) which covers all in-patient psychiatric services for the city since 1968, and also all extra-mural facilities since 1977. Only names and addresses from the sample lists were used to identify treated cases since these were the only items uniformly available for the three groups. On this basis EPCR contacts were found for 3.9 per cent of those not located in the survey, 4.5 per cent of the refusals and 4.9 per cent of those interviewed. Correspondingly there was no evidence of contact for 76.5 per cent, 67.7 per cent and 67.0 per cent; the remainder were ambiguous in that a name could be matched but not an address. The positive identification rate is probably the more important, and suggests that the interviewed sample was not appreciably biased in either direction with respect to morbidity.

The second procedure consisted of comparing an index representing the social class of a regional division with a refusal rate for that division. No significant relationship was found, suggesting that the interviewed sample was not systematically biased by social class.

Measures of morbidity

Analysis of the interviewers' PAS ratings revealed 118 women with a diagnosable psychiatric condition present during the previous month, according to either the Research Diagnostic Criteria and/or the CATEGO criteria. Complete information had been obtained from 576 women (one woman was excluded owing to subsequent evidence of an organic brain syndrome), giving a prevalence of psychiatric morbidity based upon these interviewer ratings of 20.5 per cent. Staff re-rating of current symptomatology confirmed 67.8 per cent of the interviewers' cases. The main reason for interviewer cases failing to be endorsed was that the interviewers had sometimes overrated diagnostically significant symptoms such as depressed mood and autonomic anxiety. As a result of re-rating, the overall prevalence of psychiatric morbidity was estimated at 13.9 per cent (80 cases) when either set of diagnostic criteria was applied or 13.7 per cent by RDC alone and 8.7 per cent by ID-CATEGO alone.

While both RDC and ID-CATEGO criteria were used as the primary determinants of current prevalence, the PAS interview schedule also obtained appropriate symptom information for the imposition of Bedford College diagnostic criteria as represented by a symptom checklist (Finlay-Jones *et al*, 1980; Brown and Prudo, 1981). We were thus able to replicate their diagnostic procedures and thereby examine whether differences in criteria might account for the discrepant findings obtained by Brown and Bebbington concerning the association between psychiatric morbidity and demographic factors.

Application of the Bedford College criteria to staff ratings produced an estimate of 3.8 per cent prevalence for 'cases' and 16.5 per cent for 'borderline disorders'.

TABLE II

Demographic characteristics of sample population

	n	%
Social class[1]:		
Middle class	330	57.3
Working class	236	41.0
Unknown	10	1.7
Age:		
18–34	283	49.1
35–54	193	33.5
55–65	100	17.4
Marital status:		
Single	122	21.2
Married and living with husband	351	60.9
Others[2]	103	17.9
Employment status:		
Employed[3]	407	70.7
Not employed	169	29.3

[1]According to Goldthorpe and Hope (1974)
[2]Includes divorced, widowed, separated, and cohabiting
[3]Includes those working full-time or part-time, and students.

Demographic measures

Age, social class, marital and employment status of the women interviewed are shown in Table II. The sample was relatively young (mean age 38.5 years), most were employed and the majority were married. (Through administrative error one woman aged 66 years was included in the sample).

The social class description of the sample was achieved by two different methods: one based upon the socio-economic groupings of the Office of Population Censuses and Surveys (OPCS, 1970) and the other on the occupational classification of Goldthorpe and Hope (1974). Each method was used to provide two classifications of the sample: one according to each woman's own occupation and the second according to her father's occupation if she was single and living with her father, or her husband's if she was married and living with her husband. So that comparisons with the results obtained by others were possible, the Goldthorpe and Hope classification was simplified with middle class being represented by occupational groups 1–22 and the working class by groups 23–36. The OPCS classification was also divided in two: (a)

TABLE III

Estimated prevalence (%) of psychiatric morbidity amongst women according to three alternative diagnostic criteria by four demographic factors

Demographic factor	ID≥5	RDC cases	Bedford College criteria	
			Cases	Borderlines
Social class:				
Middle class (n = 330)	5.2	9.1	1.8	15.5
Working class (n = 236)	12.3	19.1	5.5	17.8
χ^2_c (1 df)	*8.45***	*11.06****	*4.69**	*0.39*
Age:				
18–34 (n = 283)	8.1	12.7	2.8	19.1
35–54 (n = 193)	12.4	17.1	5.7	17.6
55–65 (n = 100)	3.0	10.0	3.0	7.0
χ^2 (2 df)	*7.61**	*3.27*	*2.80*	*8.09**
Marital status:				
Single (n = 122)	4.1	7.4	0.8	16.4
Married and living with husband (n = 351)	7.1	11.7	3.4	15.4
Others (n = 103)	19.4	28.2	8.7	20.4
χ^2 (2 df)	*19.29****	*23.52****	*9.94***	*1.45*
Employment status:				
Employed (n = 407)	6.1	10.3	1.7	16.2
Not employed (n = 169)	14.8	21.9	8.9	17.2
χ^2_c (1 df)	*10.21***	*12.56****	*14.75****	*0.02*

*P <0.05
**P <0.01
***P <0.001

classes I/II/III(non-manual) and (b) classes III (manual)/IV/V.

Estimates of the prevalence of psychiatric morbidity were then determined according to the ID, the RDC and the Bedford College case criteria, for each of the methods of division into social class. The trend in all these analyses was for higher prevalence of psychiatric disorder to be evident in the lower social class groups. In only three of twelve analyses did the trend fail to reach significance. (All the analyses using the RDC system yielded significant results). The morbidity estimates are shown in Table III categorized by the Goldthorpe and Hope method, using the subject's own occupation if she was employed or her father's (if the subject was unemployed, single and living with him) or her husband's (if the subject was living with him).

Table III reveals a significantly higher prevalence of cases in the *working class*, regardless of the diagnostic criteria applied. It also indicates a non-significant difference in estimates of borderline disorders when the Bedford College criteria are applied.

Prevalence estimates were then determined by each of the three remaining demographic variables and they are also shown in Table III. The results for *age* reveal the highest prevalence of disorder amongst those aged 35 to 54 years by all three diagnostic methods, although only the ID-CATEGO system provides a significant (P <.01) result. Of additional interest is the prevalence estimate of borderline disorders using the Bedford College criteria, where the lowest prevalence of sub-threshold disorders is among the oldest of the three groups of women.

The analysis by *marital status* in Table III provides consistent results regardless of the diagnostic criteria applied: the single women have the lowest rate of disorder, married women relatively higher, and women who are divorced, widowed, separated or cohabiting, the highest rates. Of this latter group, according to the ID-CATEGO system, almost one in five had a disorder of at least threshold (ID-5) level and over one in four a disorder satisfying the RDC. As with the social class results, estimates of the prevalence of Bedford College borderline 'cases' provide differing results, no variation being found in the borderline case rate with marital status.

Analysis of psychiatric morbidity by *employment status* (Table III) indicates that regardless of the diagnostic criteria applied the highest prevalence is

TABLE IV

Association between social class, age, marital and employment status (Chi-squared values)

	Social class	Age	Employment status
Marital status	13.35 (df = 2)**	55.03 (df = 4)***	17.86 (df = 2)***
Employment status	4.17 (df = 1)*	31.72 (df = 2)***	
Age	4.49 (df = 2)		

*P <0.05
**P <0.01
***P <0.001

found among those women who are not employed, ranging from just over twice that found amongst the employed (by both RDC and ID criteria), to more than a five-fold variation when Bedford College case criteria are used. The criteria for borderline disorders do not distinguish the employed from the unemployed.

Combined effect of demographic variables

The four demographic features were themselves associated as is shown in Table IV: only age and social class were not significantly inter-related.

In view of the level of association it seemed important to clarify as far as possible their independent effects when two or more factors were present together. As a first step the joint effects of each *pair* of demographic variables were considered: there were six such pairings, of which Table V provides an illustration. Then the case rates for each of the combinations of *three* factors were considered. One such combination is shown in Table VI.

The higher rates for working class women were found to hold within sub-groups defined by employment status (Table V), marital status (collapsed to two categories of single plus married and living with husband, as against all others) and in the youngest and middle aged groups. However for those aged 55 and over, middle class women had higher rates than working class women, by all three case criteria.

TABLE V

Estimated prevalence of psychiatric morbidity amongst women according to three alternative diagnostic criteria by social class and employment status (Rates as a per cent)

Class employment combination	ID≥5	RDC cases	Bedford cases
Working class and:			
Not employed (n = 78)	20.5	29.5	11.5
Employed (n = 158)	8.2	13.9	2.5
Middle class and:			
Not employed (n = 82)	7.3	13.4	4.9
Employed (n = 248)	4.4	7.7	0.8

For age, the higher rates of disorder among the middle-aged women were consistently found in all sub-groups defined by social class, marital status (two categories) and employment when the ID system was used.

Women whose marital status was classified as 'other' had higher rates irrespective of employment, social class and age according to both the ID and the RDC systems.

In general it emerged that social class, age, marital status and employment each have a separate effect on prevalence rates; occasional anomalies are not unexpected in view of the many comparisons carried out. For the Bedford 'borderlines' the picture was rather different: the only demographic variable significantly associated with prevalence was age, increasing age corresponding with a decreasing rate (Table III).

If, as it appeared, the four demographic variables operated independently with respect to prevalence of cases, it would follow that sub-groups of the community sample distinguished by a number of adverse characteristics should show particularly high rates. Table VI also illustrates that among those women who were working class, in the 'other' marital status category and not employed, the prevalence rate was 40 per cent (by ID) or 50 per cent (by RDC). At the other end of the spectrum, middle-class single employed women had rates of between 3.3 per cent and 6.7 per cent according to which case definition was used. The Bedford case rate precluded sensible subdivision at this level. Three further three-fold tables showed a similar range between the highest and lowest scoring sub-groups.

Analysis

The main purpose of this paper is to report the prevalence rates found in the different sections of the surveyed population. A subsidiary question arises when sub-groups characterized by two or more adverse attributes are considered, namely, whether the effect of each factor in isolation is sufficient to 'explain' the rates observed when both are acting at the same time, or whether as an alternative some further influence needs to be invoked such as that their joint action is synergistic, in some sense to be defined, or even antagonistic.

Statistical (logistic) analyses were carried out for each combination of two, three or all four factors. The ID, RDC and Bedford criteria were considered

https://doi.org/10.1192/bjp.142.3.238 Published online by Cambridge University Press

TABLE VI

Estimated prevalence of psychiatric morbidity according to two alternative diagnostic criteria by marital status, employment status and social class

Marital status	Employment status	Social class	ID≥5	RDC cases
Single, or married and living with husband	Employed	Middle (n = 210)	3.3	6.7
		Working (n = 129)	6.2	10.1
	Not employed	Middle (n = 70)	7.1	11.4
		Working (n = 58)	13.8	22.4
Others*	Employed	Middle (n = 38)	10.5	13.2
		Working (n = 29)	17.2	31.0
	Not employed	Middle (n = 12)	8.3	25.0
		Working (n = 20)	40.0	50.0

*Includes divorced, widowed, separated, and cohabiting

separately, though analyses of the latter were not undertaken when more than two factors were included, owing to the paucity of cases.

For the ID criteria the main conclusions were that each factor was required to explain the observed distribution and that no interactions were necessary.

On the RDC criteria most analyses led to the same general results, but in three, all of which involved age, there were discrepancies.

With the Bedford case definition four of the six analyses concurred with the ID results, the exceptions again involving age.

Though the recent development of statistical methods for dealing with multidimensional contingency tables is based largely upon multiplicative models (Fienberg, 1977) there is no *a priori* reason why combinations of factors should be expected to act multiplicatively. An alternative analytic procedure, though with weaker rationale (Galtung, 1967; Everitt and Smith, 1979) is one where the effects of factors are assumed to be additive. For comparative purposes, an additive 'main-effects' model, using the procedures of Grizzle *et al* (1969), quoted by Everitt and Smith (1979), was applied to all two-factor combinations of demographic factors (each at two levels). The results of these analyses were clear. By any of the diagnostic systems and in all the tabulations *both* demographic factors were required to describe the rates observed, and the sum of effects of each factor approximated to the observed values with no interaction terms being necessary. For example, the rate of 20.5 per cent for working class unemployed women on the ID criteria (Table V) does not deviate significantly from the sum of the effects of class and of employment status.

Discussion

In this attempt to study the population of a defined area within Edinburgh city it is important to know if the sample surveyed was in fact representative. As there are no recent Census statistics available for the electoral divisions included in the study, it is not possible to compare the sample to its parent population with any precision in respect of demographic characteristics. However it does appear that the sample was broadly similar to the female population of the city as a whole according to the latest available estimates (Registrar General's Annual Report, 1979). The two checks on possible bias were also reassuring.

This paper has reported the prevalence of psychiatric disorder among women in defined subgroups of the sampled population. The relationship between demographic factors (alone and in combination) and psychiatric morbidity as ascribed by alternative diagnostic criteria was of particular interest. Whilst distinct differences were revealed between estimates of overall prevalence determined by the different diagnostic systems, the relationship between morbidity, however measured, and the demographic factors remained broadly unaltered. Thus differences in criteria for assigning cases appear not to vitiate comparisons between different epidemiological

studies; at least, not for those diagnostic systems examined.

Our results can be contrasted with those from two recent studies (Brown and Harris, 1978; Bebbington *et al*, 1981) undertaken in one London borough. Our findings for social class agree with those of Brown and Harris when *either* their 'case' or 'borderline' criteria were used but *differ* from those of Bebbington *et al* using the ID-CATEGO criteria. For marital status our results are also broadly in line with those of Brown and Harris but differ in one respect from the Bebbington study. In the latter work no difference in rates was found between the divorced, widowed or separated and the married; the weighted prevalence estimate for married women was 18.4 per cent, a rate two and a half times that found in Edinburgh using identical case criteria. Differences between studies in sampling and design may perhaps account for the discrepancies. In particular Bebbington's study is distinct in using staff re-visits and a case-weighting procedure. After a pilot study, we rejected re-visiting by staff because the mental state of the subject sometimes appeared to change between the initial and subsequent visits, and because this change is confounded with the tendency of interviewers to over-rate psychopathology. The method we finally adopted, of monitoring a tape recording of the interview, also allows interviewer performance to be continuously checked, but on the other hand, validity is limited to the questioning expertise of the survey team.

With both the statistical models employed the results obtained when demographic factors were considered in combination clearly revealed that all the factors were required to account for the observed prevalence of disorder. However, the choice of a statistical model should always be guided both by the nature of any hypotheses being advanced and by the logical status of the factors being considered. As no specific hypotheses were being tested, and as it is impossible to distinguish consequences from causes in respect of factors such as marital and employment status, there is no prior reason in our study for advocating either model. On purely statistical grounds, multiplicative models have generally been preferred to additive models for the analysis of multidimensional contingency tables, but it is desirable that in the future statistical models should be tailored as far as possible to the psychological issues under test, rather than the scale dependency of the models largely determining the fit of psychological theory to data.

Without recourse to any statistical argument it is clear from this study that very high rates of disorder are found amongst those women in the community with combinations of particular demographic factors: Table VI indicates how up to half of particular subgroups satisfied case criteria. The significance of demographic factors should clearly not be forgotten in future analyses which seek to examine the relationship of psychosocial factors to psychiatric disorder.

Acknowledgement

We are most grateful to Mr John Duffy for statistical advice.

References

BAGLEY, C. (1973) Occupational class and symptoms of depression. *Social Science and Medicine*, **7**, 327–40.

BEBBINGTON, P., HURRY, J., TENNANT, C., STURT, E. & WING, J. K. (1981) Epidemiology of mental disorders in Camberwell. *Psychological Medicine*, **11**, 561–79.

BROWN, G. W. & HARRIS, T. O. (1978) *Social Origins of Depression: A Study of Psychiatric Disorder in Women*. London: Tavistock.

—— & PRUDO, R. (1981) Psychiatric disorder in a rural and an urban population: 1. Aetiology of depression. *Psychological Medicine*, **11**, 581–99.

BUGLASS, D., DUFFY, J. & KREITMAN, N. (1980) *A Register of Social and Medical Indices by Local Government Area in Edinburgh and the Lothians, Parts I and II*. Central Research Unit Paper, Scottish Office.

COHEN, J. (1960) A coefficient of agreement for nominal scales. *Educational and Psychological Measurement*, **20**, 37–46.

COOPER, J. E., COPELAND, J. R. M., BROWN, G. W., HARRIS, T. & GOURLAY, A. J. (1977) Further studies on interviewer training and inter-rater reliability of the Present State Examination. *Psychological Medicine*, **7**, 517–23.

DEAN, C., SURTEES, P. G. & SASHIDHARAN, S. P. Comparison of research diagnostic systems in an Edinburgh community sample. (In Press. *British Journal of Psychiatry*).

DOHRENWEND, B. P. & DOHRENWEND, B. S. (1969) *Social Status and Psychological Disorder: A Causal Inquiry*. New York: Wiley-Interscience.

EASTWOOD, M. R. (1981) Editorial. Epidemiology and depression. *Psychological Medicine*, **11**, 229–34.

EVERITT, B. S. & SMITH, A. M. R. (1979) Interactions in contingency tables: a brief discussion of alternative definitions. *Psychological Medicine*, **9**, 581–3.

FARIS, R. & DUNHAM, H. W. (1939) *Mental Disorders in Urban Areas*. Chicago: University of Chicago Press.

FIENBERG, S. E. (1977) *The Analysis of Cross-Classified Categorical Data*. Cambridge: MIT Press.

FINLAY-JONES, R., BROWN, G. W., DUNCAN-JONES, P., HARRIS, T., MURPHY, E. & PRUDO, R. (1980) Depression and anxiety in the community: replicating the diagnosis of a case. *Psychological Medicine*, **10**, 445–54.

GALTUNG, J. (1967) *Theory and Methods of Social Research*. London: Allen & Unwin.

GOLDTHORPE, J. & HOPE, K. (1974) *The Social Grading of Occupations: A New Approach and Scale*. London: Oxford University Press.

GRIZZLE, J. E., STARMER, C. F. & KOCH, G. G. (1969) Analysis of categorical data by linear models. *Biometrics*, **25**, 489–504.

HOLLINGSHEAD, A. B. & REDLICH, F. C. (1958) *Social Class and Mental Illness: A Community Study*. New York: Wiley.

KISH, L. (1965) *Survey Sampling*. New York: Wiley.

LANGNER, T. & MICHAEL, S. (1963) *Life Stress and Mental Health*. New York: Free Press.

NOYES, A. & KOLB, L. (1958) *Modern Clinical Psychiatry*, 5th Ed. Philadelphia: W. B. Saunders.

OFFICE OF POPULATION CENSUSES AND SURVEYS (1970) *Classification of Occupations, 1970*. London: HMSO.

SPITZER, R. L., ENDICOTT, J. & ROBINS, E. (1978) Research Diagnostic Criteria: Rationale and reliability. *Archives of General Psychiatry*, **35**, 773–82.

SROLE, L., LANGNER, T. S., MICHAEL, S. T., OPLER, M. K. & RENNIE, T. A. C. (1962) *Mental Health in the Metropolis*. New York. McGraw-Hill.

STURT, E., BEBBINGTON, P., HURRY, J. & TENNANT, C. (1981) The Present State Examination used by interviewers from a survey agency: Report from the MRC Camberwell Community Survey. *Psychological Medicine*, **11**, 185–92.

UHLENHUTH, E. H., LIPMANN, R. S., BALTER, M. B. & STERN, M. (1974) Symptom intensity and life stress in the city. *Archives of General Psychiatry*, **31**, 759–64.

WARHEIT, G. J., HOLZER, C. E. & SCHWAB, J. J. (1973) An analysis of social class and racial differences in depressive symptomatology: A community study. *Journal of Health and Social Behavior*, **14**, 291–9.

WEISSMAN, M. M. & MYERS, J. K. (1978a) Rates and risks of depressive symptoms in a United States urban community. *Acta Psychiatrica Scandinavica*, **57**, 219–31.

—— —— (1978b) Affective disorders in a US urban community: the use of Research Diagnostic Criteria in an epidemiological survey. *Archives of General Psychiatry*, **35**, 1304–14.

—— —— (1980) Psychiatric disorders in a US community. The application of Research Diagnostic Criteria to a resurveyed community sample. *Acta Psychiatrica Scandinavica*, **62**, 99–111.

WING, J. K., COOPER, J. E. & SARTORIUS, N. (1974) *The Measurement and Classification of Psychiatric Symptoms*. Cambridge: Cambridge University Press.

—— HENDERSON, A. S. & WINCKLE, M. (1977a) The rating of symptoms by a psychiatrist and a non-psychiatrist: a study of patients referred from general practice. *Psychological Medicine*, **7**, 713–15.

—— NIXON, J. M., MANN, S. A. & LEFF, J. P. (1977b). Reliability of the PSE (ninth edition) used in a population study. *Psychological Medicine*, **5**, 505–16.

—— & STURT, E. (1978) *The PSE-ID-CATEGO System: Supplementary Manual*. London: MRC Social Psychiatry Unit.

WOODRUFF, R. A., ROBINS, L. N., WINOKUR, G. & REICH, T. (1971). Manic-depressive illness and social achievement. *Acta Psychiatrica Scandinavica*, **47**, 237–49.

*P. G. Surtees, B.Sc., M.Sc., Ph.D., *MRC Unit for Epidemiological Studies in Psychiatry*

C. Dean, M.B., Ch.B., B.A., M.R.C.Psych., *Lecturer*

J. G. Ingham, B.Sc., Ph.D., F.B.Ps.S., *Assistant Director, MRC Unit for Epidemiological Studies in Psychiatry*

N. B. Kreitman, F.R.C.P.(Ed.), F.R.C.Psych., M.D. (Lond.), *Director, MRC Unit for Epidemiological Studies in Psychiatry*

P. McC. Miller, B.Sc., Ph.D., *MRC Unit for Epidemiological Studies in Psychiatry*

S. P. Sashidharan, M.B., B.S., M.Phil., M.R.C.Psych., *MRC Unit for Epidemiological Studies in Psychiatry*

University Department of Psychiatry, Royal Edinburgh Hospital, Morningside Park, Edinburgh EH10 5HF, Scotland

*Reprints

(Received 23 June; revised 22 September 1982)