

Self-poisoning and self-injury in the Oxford area

Epidemiological aspects 1969-73

J. H. J. BANCROFT, A. M. SKRIMSHIRE, F. REYNOLDS, S. SIMKIN, AND J. SMITH

Department of Psychiatry, University of Oxford, Warneford Hospital, Oxford

Bancroft, J. H. J., Skrimshire, A. M., Reynolds, F., Simkin, S., and Smith, J. (1975). *British Journal of Preventive and Social Medicine*, **29**, 170-177. **Self-poisoning and self injury in the Oxford area: epidemiological aspects 1969-73.** A prospective study of self-poisoning and self-injury in the Oxford area for 1972-73 and a retrospective study for 1969 has shown the following:

- (a) The number of admissions to a general hospital following self-poisoning and self-injury has increased by approximately 45% in 3½ years. The increase is more marked in women than in men.
- (b) When compared with a previous study the incidence in Oxford city has quadrupled in ten years.
- (c) A total of 74% of men and 67% of women, aged 16 years and over, harming themselves in this way are under the age of 35 years. The repetitiveness is increasing and the proportion of those repeating the attempt was 10% within three months, and 15% within six months.
- (d) The rates are exceptionally high for teenage wives and single, widowed, and divorced women aged between 24-35 years. Single men show exceptionally high rates in the 35-45 year age group.
- (e) With the exception of married women aged between 25 and 34 years and women over 60, the rates were higher in urban than in rural areas.
- (f) In men the rates were higher among personal service workers, semi-skilled manual, and unskilled manual workers. In women the rates were highest among non-manual, ancillary to professional (especially nurses), and semi-skilled manual workers. Male students had rates much lower than those of their age group, while female students had rates about the same as their age group. The lowest rates were among professional and 'own account' workers.

Deliberate self-poisoning and self-injury is probably increasing in frequency throughout the United Kingdom (Alderson, 1974). This trend is examined for the Oxford area during the period 1969-73, following an earlier study by Evans (1967) for a similar area during the period 1962-65. Three main aspects of the problem will be considered:

1. Changing incidence and repetitiveness of the behaviour together with demographic characteristics of those involved such as age and civil status.
2. Urban-rural differences in incidence.
3. The association between incidence and socio-economic grouping obtained from the 1971 census.

In the discussion the results will be compared with those reported from Edinburgh during a similar period.

Changes in the use of drugs in self-poisoning and aspects of general hospital care will be reported elsewhere.

SOURCE OF DATA AND METHOD

DEFINITION OF SELF-POISONING AND SELF-INJURY

SELF-POISONING This was defined as the intentional self-administration of more than the prescribed dose of any drug whether or not there was evidence that the act was intended to cause self-harm.* The

*This definition will be discussed further

exceptions to this definition were overdoses of 'drugs for kicks' and poisoning by non-ingestible substances, and gas. Such incidents were only included when the doctor or other hospital staff concerned with the case considered that it was or might be one of deliberate self-harm. Alcohol intoxication was not included unless accompanied by other types of self-poisoning or self-injury. A few cases in which there was clear evidence that the poison was not self-administered were excluded.

SELF-INJURY Cases were defined as those recognized as deliberate self-injury and notified as such to the research team by the general practitioner or hospital accident service.

STUDY AREA

This was chosen as an area from which all hospital referrals would be made to one general hospital (in Oxford). Where rates are given, they are for this area. It was also chosen to include urban, rural, and semi-rural areas. The boundaries of this area are shown in Fig. 1.* The population at the 1971 census of those aged 15 years and over in this area was 109 325 men and 109 122 women.

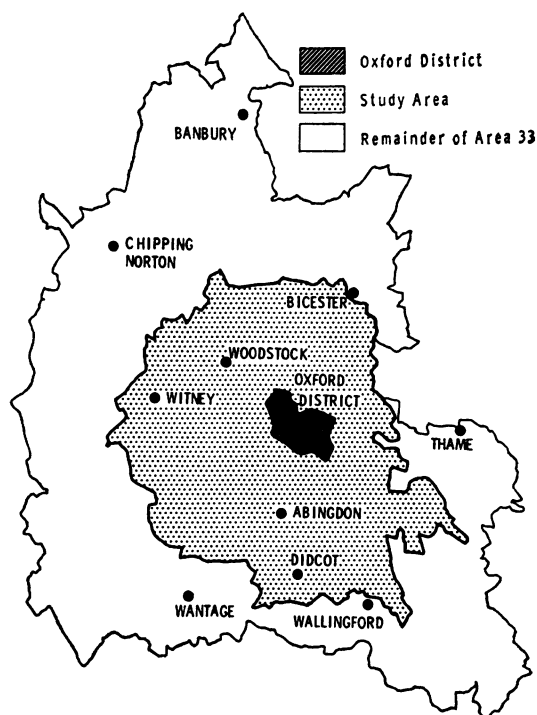


FIG. 1 Boundaries of study area.

*A list of urban and municipal districts and civil parishes can be supplied on request

SOURCE OF DATA

Detailed investigation was confined to those aged 16 years and over. Figures for the base population are taken from the 1971 census, summing all enumeration districts from the study area. In order to calculate rates, 15 years was taken as the lowest age, and limited information was collected for cases aged 15 to 16 years.

CASENOTE STUDY 1972-73

All cases of self-poisoning and self-injury referred to the general hospital, from both within and outside the study area, were included for the 12 months April 1972 to April 1973. In addition general practitioners in the study area reported directly to the research team (by means of a telephone answering service) all cases known to have occurred among their patients for whom referral to the general hospital had not been arranged. Further details of this general practitioner study will be reported elsewhere (Hawton and Blackstock, 1975).

CASENOTE STUDY 1969

Cases admitted as inpatients to the general hospital from all areas after self-poisoning and self-injury during the year 1969 were identified in two ways. First, by means of the Oxford Record Linkage Study (Baldwin, 1973); as there is no separate diagnostic category of deliberate self-poisoning or self-injury, all diagnostic categories which might be relevant (that is, 300.9, 874, 881, 884, 910, 913, 965, 966, 967, 970, 977, 978, 979, 986, 989, and 994) were searched, and 673 casenotes identified. Of these, 228 cases not meeting the above definition were excluded. Only two or three casenotes could not be traced. Secondly, the hospital discharge book for 1969 was examined and in all cases with possibly relevant diagnoses the casenotes were examined. Cases referred to hospital but not admitted could not be identified in either way. This study therefore applied to inpatient admissions only.

INTERVIEW STUDY

For the six-month period June 1972 to December 1972, 50% of all persons involved in self-poisoning or self-injury within the study area were interviewed by a social worker or doctor in the research team. Most of the data from the study, together with details of the sampling procedure and interview method, will be reported elsewhere.

RESULTS

INCIDENCE

The following terms will be used: 'person' to indicate an individual involved in a self-poisoning or self-injuring act; 'attempt' to indicate one such act.

ADMISSIONS TO HOSPITAL The numbers of persons aged 16 years and over admitted during the two years 1969 and 1972-73 are shown in Table I.* Rates per 100 000 are shown in Table II.

TABLE I
OXFORD 'ATTEMPTED SUICIDE' DURING 1969 AND 1972-73
AGED 16 YEARS AND OVER (ADMISSIONS ONLY)

Year	Male		Female	
	Attempts	Persons	Attempts	Persons
1969	171	161	301	283
1972-73	219	188	481	397

TABLE II
PERSONS 'ATTEMPTING SUICIDE' IN THE STUDY AREA:
RATES PER 100 000 POPULATION AGED 15 YEARS AND
OVER

Year	Male	Female
Admissions only		
1969	127	227
1972-73	139	303
All known cases 1972-73	170	366

OTHER CASES Details of those who were referred to hospital but not admitted, and those not referred but who were notified to the research team by the general practitioner are available only for 1972-73. Numbers involved and their percentage of the total for the year are shown in Table III.

TABLE III
OXFORD 'ATTEMPTED SUICIDE' ALL KNOWN 'ATTEMPTS' 1972-73 AGED 16 YEARS AND OVER

Hospital	Male		Female	
	Attempts	Persons	Attempts	Persons
Not admitted	48 (17.7)	37 (16.2)	55 (9.8)	44 (9.5)
Not referred	4 (1.5)	4 (1.7)	25 (4.5)	23 (5.0)
Total	271 (100.0)	229 (100.0)	561 (100.0)	464 (100.0)

Percentages of total number of people involved are given in parentheses

Altogether 82.6% of 'admitted' persons and 89.3% of 'not admitted' persons were from the study area. The 'not referred' persons were by definition all from within the study area.

The proportion of attempts admitted to hospital involving self-injury only was 1.7% in 1969 and 2.9% for 1972-73. The proportion was higher (23.3%) in those 'not admitted' in 1972-73, indicating that minor self-injuries are less likely to be admitted than minor overdoses.

AGE

The percentages of persons 'admitted' in each age group are shown in Table IV. Persons 'not admitted' tended to be slightly younger, 53.1% being under 26. The age distribution is similar for the two years. Rates by sex and age group for 1972-73 are shown in Fig. 2.† Of those aged 16 years and over in 1972-73, 74.2% of men and 66.8% of women were under the age of 36.

TABLE IV
AGE DISTRIBUTION OF PERSONS 'ATTEMPTING SUICIDE'
(ADMISSIONS ONLY) 1969 AND 1972-73

Age (years)	Number			
	1969		1972-73	
16-20	88	(19.8)	117	(20.0)
21-25	93	(20.9)	132	(22.6)
26-30	67	(15.1)	91	(15.6)
31-40	75	(16.9)	111	(19.0)
41-50	63	(14.2)	67	(11.5)
51-65	38	(8.6)	46	(7.9)
66+	20	(4.5)	20	(3.4)
Not known	0	—	1	(0.2)
Total	444	(100.0)	585	(100.0)

Percentages are given in parentheses

MARITAL STATE

The percentages of persons by marital state were similar for the two years (36.7% single and 48.6%

*In 1969 there were 13 persons aged 15 years involved in 13 attempts. In 1972-73 there were an estimated eight persons aged 15 involved in eight attempts

†Detailed tables of the rates corresponding to the figures have been omitted in the interest of economy. Copies of these can be supplied on request. Cases with missing information on age and marital state were redistributed in proportion to the numbers with complete information.

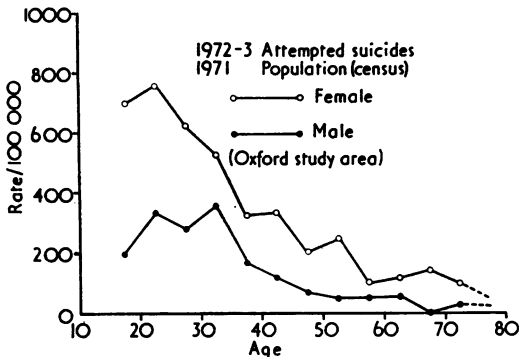


FIG. 2. Attempted suicide rates by sex and age.†

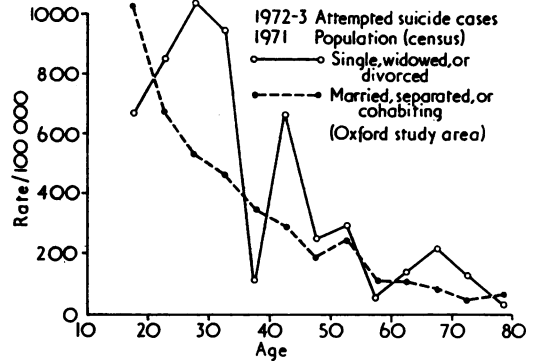


FIG. 4. Attempted suicide rates by age and marital status (women).†

married in 1969; 36.8% single and 42.6% married in 1972-73). The calculation of rates for 1972-73 is restricted by the fact that the census data for small areas are available by only two broad categories of marital states:

1. single, widowed, and divorced
2. married and separated*

Rates by age for these two broad categories are shown for men and women separately in Figs 3 and 4. For both men and women the trend over age differed with marital state. The single, widowed, and divorced showed their peaks in the 25-45 year age range, while the married, cohabiting, and separated showed the highest rates in the under 25 year age group. The rates for single women, however, reach their peak younger than those for single men and drop sharply after the age of 35 years. When age groups are divided further, one finds a rate of 1027 per 100 000 for the married teenage women and 865 for

single men aged 30-34 years. The numbers involved are small, however, and the rates presumably unstable.

REPETITION

PREVIOUS ATTEMPTS In 1969, 23.6% of persons identified in the study were known to have made an 'attempt' before their index attempt. In 1972-73 the proportion of those admitted was 35.6%. These figures rely on recorded evidence of previous attempts in the casenotes. On the basis of information from our interviewed sample these figures are likely to be underestimated by approximately 13%. There was no sex difference in the proportion of previous attempts, which was highest in the 21-25 year age group (42.3%).

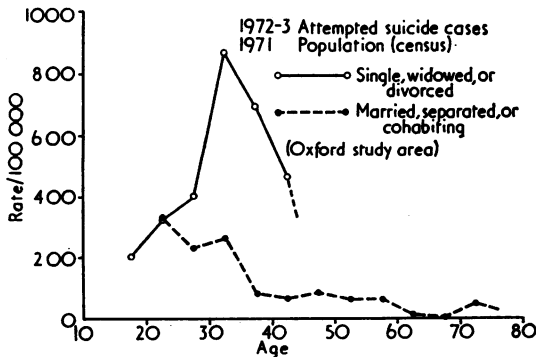


FIG. 3. Attempted suicide rates by age and marital status (men).†

*Those cohabiting were included with the married whereas it is not clear what would happen to such persons in the census.
†Rates are for 'persons' not 'attempts'.

FURTHER ATTEMPTS The simplest statistic to express the extent of repetition in a given period is the ratio of the total number of attempts to the number of persons involved for a given period (attempt : person ratio). In 1969 the ratio for both men and women was 1.06. In 1972-73 the ratio for men was 1.18 and for women 1.21. In 1969 5.0% of persons repeated the attempt once within the year, 0.7% repeated twice. In 1972-73, 7.9% repeated once, 3.0% twice, 1.4% three or more times. One person repeated seven times. It is possible that the 1969 figures may be lowered by attempts being repeated but not leading to admission and hence not being identified by the record linkage study. In an earlier study (Evans, 1967) the admission-to-person ratio was 1.09 for a four-year period. This, together with our figures indicates that the extent of repetition has increased substantially over the past ten years. A similar trend in men, although not in women, has been observed in Edinburgh (Kreitman, 1973).

TABLE V

PERCENTAGE OF PATIENTS REPEATING ATTEMPT WITHIN 3 AND 6 MONTHS (1972-73)

Patients	Within 3 mths (all cases in first 9 mths of study)		Within 6 mths (all cases in first 6 mths of study)	
	%	(n=100%)	%	(n=100%)
Admitted				
Yes ..	9.9	(446)	14.1	(305)
No ..	15.3	(59)	20.0	(45)
Not referred ..	8.7	(23)	12.5	(16)
Known previous attempt ..	19.9	(181)	28.2	(131)
Assumed first attempt ..	5.5	(347)	7.2	(235)
Total ..	10.4	(528)	14.8	(366)

The proportion of persons repeating an attempt within a three month and six month period for 1972-73 is shown in Table V. There was no sex difference in this rate of repeated attempts for either period. The rate for both periods was highest in the 21-25 year and 36-40 year age groups (13.4% and 22.1%; 19.9% and 23.3% respectively). [This association is similar to that between age and previous attempts, but it persists when the presence of a previous attempt is held constant.]

URBAN-RURAL DIFFERENCES

A detailed social area analysis will be reported elsewhere (in preparation). Here the overall rates for men and women are given for Oxford city (that is, Oxford county borough), the small county towns (Witney, Abingdon, and Woodstock) as well as semi-urban, semi-rural, and rural areas within the study area (see Table VI). Rates for 1972-73 by age and sex are given for Oxford city and the remaining areas combined (the 'County' areas) in Table VII.

There are higher rates in the city for both sexes, the ratio of city to county rates being higher for men (2.0 : 1) than for women (1.6 : 1). In 1969, the ratio for men was 2.5 : 1; for women 1.7 : 1. The increase between 1969 and 1972-73 in men, therefore, has been more marked in the county than in the city. In contrast to the overall rates, the extent of repetition in city and county is very similar (for men 12.1% repeated their attempt in the city, 11.4% in the county; for women the figures are 13.2% and 11.3%). This contrasts with Edinburgh, where repetition among men is higher in the city than outside (Kreitman, 1973).

TABLE VI

PERSONS 'ATTEMPTING SUICIDE' IN THE STUDY AREA (1972-73) (AGED 16 YEARS AND OVER) RATES PER 100 000 POPULATION BY URBAN-RURAL CLASSIFICATION

Area	Men	Women	Both
Oxford CB ..	238	456	347
Witney UD ..	135	333	238
Abingdon/ Woodstock ..	148	219	184
Semi-urban ..	164	403	283
Semi-rural ..	85	170	128
Rural (i.e. the rest) ..	67	239	153
Overall ..	166	354	260

These rates differ slightly from those shown in other tables because they exclude 15-year-old patients and also a few patients who had no fixed address who could be allocated between city and county, but not assigned to a precise enumeration district

TABLE VII

PERSONS 'ATTEMPTING SUICIDE': CITY AND COUNTY RATES PER 100 000 BY AGE AND SEX (1972-73)

Age	Men		Women	
	City	County	City	County
15-24	316	231	1016	489
25-34	538	203	635	528
35-59	160	61	349	181
60+	37	27	74	117
Total	245	120	472	291

SOCIOECONOMIC CHARACTERISTICS

In the 1972-73 study, 15.3% of men were actively seeking work or were otherwise unemployed. Because of uncertain differences between this study and the census in defining employment status, several categories have been merged in calculating rates. Rates by sex and marital state for working, retired, and 'others' (that is, seeking work, sick, aged 16 years and over who are at school, students, housewives, never employed, or not seeking work for some other specified reason) are given in Table VIII. In 90.6% of cases there were sufficient data for classification by socioeconomic group. Rates per 100 000 by socioeconomic group can be calculated only for economically active persons. These are shown in Table IX. The rates for married housewives and economically inactive women who were in both cases under the age of 60 were 424 and 473 per 100 000 respectively. Rates for these groups cannot be calculated by socioeconomic group or age.

TABLE VIII

PERSONS 'ATTEMPTING SUICIDE' IN THE STUDY AREA (1972-73) RATES PER 100 000 POPULATION AGED 15 YEARS AND OVER BY SEX, MARITAL STATE, AND EMPLOYMENT STATUS

Employment Status	Men			Women		
	Single Widowed Divorced	Married	Total	Single Widowed Divorced	Married	Total
Working	298	93	145	460	279	344
Retired	41	0	12	75	69	73
Seeking work, sick, other	311	583	361	664	414	474

Cases with missing information were redistributed in proportion to the numbers with complete information

TABLE IX

PATIENTS FROM THE STUDY AREA ATTEMPTING SUICIDE 1972-73 RATES PER 100 000 FOR ECONOMICALLY ACTIVE PERSONS IN EACH SOCIOECONOMIC GROUP

Socioeconomic Group	Men		Women	
	No.	Rate	No.	Rate
1, 2, 13 Employers, managers (including farmers)	7	77	7	317
3, 4 Professional workers, self-employed and employees ..	3	45	1	104
5 Non-manual, ancillary to professional (for example, artists, nurses, teachers, technicians, supervisors)	7	118	39	564
6 Junior non-manual (for example, clerks)	15	149	55	288
7 Personal service workers	9	559	27	348
8, 9 Skilled manual including foremen	38	157	6	359
10 Semi-skilled manual	27	217	16	546
11 Unskilled manual	11	207	10	249
12, 14 Own account workers, in trades, services, manual, or farming	3	80	2	253
15 Agricultural workers employees	2	156	1	435
16 Armed forces	3	108	1	769

Rates for students and schoolchildren aged 15 years and over were computed for the 24 weeks of university term. The rate for male students and schoolboys in this period is markedly lower than the rate for the whole of the roughly equivalent age group (67 and 108 per 100 000 respectively). The rate for women students and schoolgirls is very similar to that for the whole of the age group (347 and 332 per 100 000 respectively). Further details of the attempts by students will be reported elsewhere (in preparation).

DISCUSSION

DEFINITION OF A CASE

The two studies with which direct comparison of incidence will be made are the earlier Oxford area

study (Evans, 1967) and the continuing Edinburgh survey (Aitken, Buglass, and Kreitman, 1969; unpublished annual reports from the MRC Unit for Epidemiological Studies in Psychiatry, Edinburgh; Kreitman, 1973). The definition of a case in each study should be considered first. In Evans's study only self-poisoning attempts were included. In the present study this would have reduced the number of cases by 2% to 3%. Self-poisoning was defined as 'deliberate acute self-administration of a drug or poison with the intention of causing or risking death or harm, or in order to give the impression of such intention. In doubtful cases the recorded opinion of the responsible clinician was to be accepted'. At the present time such a definition would be difficult to apply with

certainty. Cases of self-poisoning with non-ingestible substances present little problem. With drugs, however, a frequent account by self-poisoners is that they 'wanted to have a good long sleep' or make sure they got rid of pain. The implication of suicidal intent or self-harm in such cases is conjectural. For this reason we included all cases where more than the prescribed dose was *knowingly* taken. It is possible that this would lead to more cases being included than with the earlier definition although the difference is likely to be very small.* In the Edinburgh study (Aitken *et al.*, 1969), few details of case identification are given. 'No distinction is made between so-called gestures and serious attempts at suicide. Those who accidentally poisoned or injured themselves have been excluded'. In their later reports, however (Kreitman, 1973), they distinguish between deliberate self-poisoning or injury and overdoses of drugs taken 'for kicks' or misused. The 'misused' category would presumably be included in this study's definition. The 'drugs for kicks'—that is, drugs not normally used medicinally—would be included here only if the overdose was judged to be intentionally harmful. The use of this category, which represents up to 9% of Edinburgh's cases and only 1-2% of Oxford's, probably lowers the Oxford incidence slightly in comparison with Edinburgh. Clearly it is important for comparative work that definitions of 'attempts' are precisely reported. The comparability of record linkage data with prospectively collected data also requires consideration. In our 1969 figures, 8.1% of the total admissions identified were missed by the record linkage and only identified by the discharge register. The combination of both methods has probably reduced the number of missed cases for 1969 to negligible proportions, but Grimley Evans's earlier figures, dependent solely on record linkage, may be an underestimate by as much as 10%.

With these qualifications, the rates for the three studies can be compared.

INCIDENCE

A comparison of admission rates in Evans's study and in this one is shown in Fig. 5. Two rates are given from the Evans's study, one shows rates for Oxford county borough (that is, city), the other for the whole area. Our area comes between these two both in size and in proportion of urban and rural

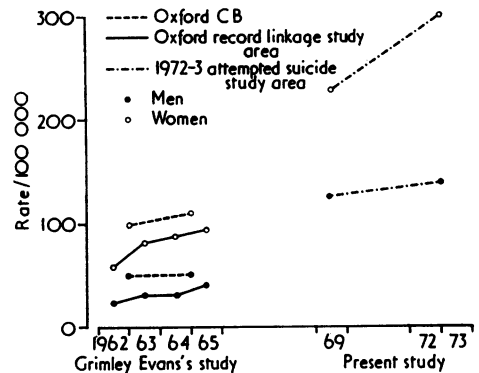


Fig. 5. Persons attempting suicide in the Oxford area (those aged 15 and over who were admitted to hospital).

areas. The increase has been most marked in women and may be levelling off in men in particular where the city is concerned.

In the Regional Poisoning Treatment Unit at Edinburgh, all self-poisoning and self-injury cases are admitted. Their rates are for Edinburgh city only. These can be compared with Oxford city (that is, county borough) for 1962-63 and 1972-73, although in the former year the Oxford rates will be relatively low because non-admissions are not included.† The comparison is shown in Table X. Even though the

TABLE X
PERSONS 'ATTEMPTING SUICIDE': COMPARISON OF 10 YEAR INCREASE IN RATES PER 100 000 POPULATION FOR OXFORD AND EDINBURGH CITIES

Year	Oxford City		Edinburgh City	
	Men	Women	Men	Women
1962-63	50*	98*	92	142
1972-73	245	472	219†	354†

*Admissions only
†Rates for 1973

early Oxford figures will exclude some non-admissions, it is clear that the rates for both men and women were higher in Edinburgh in 1962-63. Now they are both higher in Oxford city where clearly the rate of increase has been substantially greater. As there is no poisoning treatment unit in Oxford, it is unlikely that such a unit has significantly aggravated the incidence in Edinburgh, as has sometimes been suggested. (For a comparison of incidence rates in other studies see the review by Weissman (1974).)

*In Evans's study patients aged between 10 and 15 years were included whereas he omitted 33 students. He attempted to correct for students present in census data and also to correct for population increase. It is not clear whether he excluded 0-9 year-olds from his population base for crude rates. Some of these factors would also tend to lower his rates in comparison with ours.

†It is probable that the proportion of cases not admitted in Oxford at that time was lower than it is now.

URBAN-RURAL DIFFERENCES

The general pattern is similar to that reported by Evans (1967). The reason for the urban-rural differences is likely to be complex. The comparison of high incidence areas in city and county is made in the social area analysis (in preparation). The most obvious explanation is that conditions associated with high incidence are relatively over-represented in the city. Differing referral rates might contribute; there was a slight difference in the proportion of cases 'not referred' by general practitioners in the county and city (6.6% and 3.0% respectively). It is certainly feasible that minor overdoses are more likely to be sent to hospital if the distance involved is small. However, this factor is unlikely to be sufficient to account for the difference.

SOCIOECONOMIC GROUPS

Reports from Edinburgh (Kreitman, 1973) have consistently shown parasuicide rates to be higher in the lower social classes. In this report the use of socioeconomic groups enables us to look at this association more closely. Although the general trend is the same there are a number of socioeconomic groups worthy of special note. In the men the highest rate was in socioeconomic group 7 which includes personal service workers and covers a wide range of occupations. Although there are only nine men in this group, they were all connected with the catering trade. In women, notably high rates were in socioeconomic group 5 (non-manual, ancillary to professional) and over half of the cases in this group were nurses. This would suggest that nurses are especially at risk. Self-poisoning by nurses using drugs available because of their job was unusual. The contact that nurses have with patients taking overdoses, however, raises the possibility that 'contagion' may be a factor. Socioeconomic group 10 (semi-skilled manual) has high rates for both

economically active men and women. Of this group 77% of the men and 50% of the women were employed in car production.

Rates were notably low not only in the professional groups, but also in the 'own account' workers who may be of relatively low social if not economic status. This suggests that the degree of job involvement and satisfaction may be important, although these lower rates may also reflect older age groups.

This research was supported by a grant from the Department of Health and Social Security. We are grateful to Dr. John Baldwin and Professor Michael Gelder for their help and comments on the manuscripts.

The research was carried out as part of a wider research programme by a team which, in addition to the authors, included E. E. Blackstock, J. Casson, J. Crowle, O. M. Harvard-Watts, K. E. Hawton, and S. Ramon.

Requests for reprints: J. H. J. Bancroft, MD, MRCP, FRCPsych., Clinical Reader in Psychiatry, University of Oxford, Oxford.

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