

Self-poisoning: changing patterns in East Cheshire, 1970 to 1975

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SUMMARY. This study describes the changing patterns of adult self-poisoning in East Cheshire between 1970 and 1975. Six hundred and ninety episodes were analysed. It was found that the percentage of acute medical admissions due to self-poisoning increased during the five years: it doubled for females and trebled for males.

The average annual incidence of self-poisoning was one per 600 of the population, a rate lower than that in the cities. It was most common in females under 25 years of age, the divorced and single, the unemployed, urban dwellers, previous self-poisoners, and social classes 4 and 5. In a third of the patients it followed a quarrel with a sexual partner. The risk of unconsciousness increased with age and occurred in over half the patients aged between 65 and 74 years. The mortality rate was almost the same for repeaters as non-repeaters—seven per cent overall. Half of the patients presented at the accident and emergency department within two hours of taking the poison.

It is recommended that the medical records of patients with multiple self-poisoning risk factors be identified with temporary stickers.

Introduction

MOST of the recent studies of self-poisoning have been centred on cities. This retrospective epidemiological study is based on a mixed urban and rural population in East Cheshire, the catchment area of Macclesfield hospital (Figure 1).

Aim

The aim was to investigate trends in self-poisoning in a well defined mixed urban and rural population for five years and to identify high-risk groups.

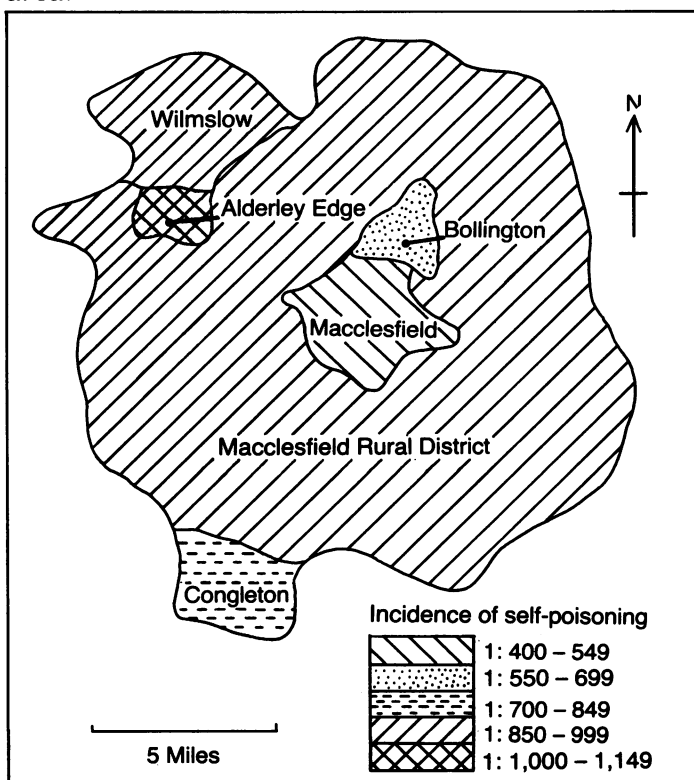
Method

Macclesfield is a small industrial town with a population of 45,000, and Bollington is an industrial settlement on its north-east side with a population of 8,000. They are separated from Wilmslow (population 30,000) and Alderley Edge (population 5,000), both predominantly dormitory towns for Manchester, by a band of open country (population 27,000). Congleton is a market town with a population of 20,000 and is situated eight miles south of Macclesfield.

Self-poisoning was defined as the intentional self-administration of more than the therapeutic dose of any drug or toxic agent, excluding alcohol alone and poisoning in children aged under 14 years.

Retrospectively, from the main register, I recorded

Figure 1. Annual incidence of self-poisoning for districts within Macclesfield Hospital catchment area.



details of all 690 patients who attended the accident and emergency department of Macclesfield Hospital between January 1970 and 1975. Further information was obtained from inpatient casenotes and coroner's records.

Fifty-eight (90 per cent) of the general practitioners within the catchment area of Macclesfield Hospital replied to a questionnaire about their referral policy for self-poisoning patients. Although it was not possible to cross-check their replies, it appeared that almost all their self-poisoning patients were referred to a hospital, 80 per cent to Macclesfield Hospital. Hence, the estimated totals of all self-poisoning cases in the catchment area for each age group were those recorded from the casualty register in each age group times a factor of 100/80. Similarly, the estimated totals of all self-poisoning cases in each district were derived from the replies to the questionnaire (Table 1). It was assumed that the number of residents in the catchment area who self-poisoned outside the area was the same as the number of outsiders self-poisoning within the area, and hence the latter (22 patients) were included in the study. Two hundred and twenty-five patients whose address was unknown (including the above but mainly involving those seen only at casualty) were redistributed in the proportion of those with known addresses.

Knowledge of the agents used was based on statements by referring general practitioners, patients and friends in casualty, and examination of any containers produced. Occasionally, biochemical evidence was also available.

All patients who were admitted (82 per cent of casualty attenders) were assessed by a psychiatrist.

The control data for the catchment population were taken from the 1971 census, including the socio-economic data based on a 10 per cent sample. The socio-economic data on the self-poisoning group were limited, as precise job descriptions were often not recorded (hence the combination of groups). Also, some un-

employed women may have been misclassified as 'housewife'. Macclesfield employment office provided data on unemployment.

'Repeaters' either had a previous self-poisoning recorded in their notes or had appeared before during the study period.

The chi-squared test was used for the significance of monthly and weekday variation, and the Spearman test was used for male and female monthly correlation.

Results

The average estimated annual incidence of self-poisoning for each district within the study area is summarized in Table 1. In 1970 self-poisoning accounted for 4.3 per cent of acute male medical admissions and 11.4 per cent of acute female medical admissions. By 1974 this had risen to 13.3 per cent of acute male and 21.2 per cent of acute female admissions.

Fifty-four per cent of males and 48 per cent of females presented at the accident and emergency department within two hours of ingesting the poison. There was a build-up of patients arriving at the hospital in the evening, reaching a peak between midnight and 01.00 hours.

The age distribution, by sex, is shown in Table 2, the monthly distribution, by sex, in Table 3, and the weekday distribution in Table 4.

Twenty-four per cent of males and 16 per cent of females became unconscious (unresponsive to verbal command). About half of the males aged between 45 and 54 years and over 65 years became unconscious, as did about half of the females aged between 55 and 75 years. Nine per cent of the males and five per cent of the females died. The total mortality was seven per cent, although only a third had been seen at hospital, the remainder having been found dead.

The marital status of the self-poisoners compared with the general population of the area is shown in

Table 1. Estimated annual incidence of self-poisoning for districts within the study area.

Districts (adult populations over 14 years of age)	Patients seen at Macclesfield Hospital accident and emergency department	Percentage of patients referred to Macclesfield Hospital	Estimated total patients in each district	Percentage of repeaters (N=90)	Percentage of non-repeaters (N=532)	Estimated annual incidence of self-poisoning for population over 14 years of age
Macclesfield Metropolitan Borough (34,000)	405	100	405	73	52	1:420
Wilmslow Urban District (23,000)	97	75	129	9	16	1:890
Macclesfield Rural District (21,000)	67	60	112	5	12	1:940
Congleton Metropolitan Borough (16,000)	68	60	113	5	12	1:705
Bollington Urban District (5,000)	38	100	38	3	6	1:660
Alderley Edge Urban District (3,400)	15	100	15	5	2	1:1,135

Table 5, and the social class in Table 6. Twenty per cent of males and six per cent of females were unemployed, with an aggregate of 12.8 per cent compared with 3.6 per cent of the local population.

Seventy-five per cent of agents used were available only on prescription.

Alcohol was associated with 25 per cent of male and 13 per cent of female self-poisonings; for these, 'alcoholic self-pity' was often recorded as a precipitating cause. Carbon monoxide accounted for six of the 21 male deaths, and barbiturates for eight of the 24 female deaths.

Fourteen per cent of self-poisoners had repeated at least once. Proportionately more repeaters than non-repeaters lived in Macclesfield (Table 1). Eight per cent of repeaters died compared with seven per cent of non-repeaters.

Discussion

This mixed urban and rural study confirms the high and increasing incidence of self-poisoning reported by many other authors (Bancroft *et al*, 1975; Jones, 1977; Proudfoot and Park, 1978). Compared with the cities, it was less common. In 1970, the combined self-poisoning rate for males and females in Edinburgh was 250 per 100,000 population (Kennedy and Kreitman, 1973). In Macclesfield town it was 170. Although the reasons are not clear, the East Cheshire general practitioners appeared to refer nearly all of their self-poisoning patients to hospital, in contrast with the Edinburgh study where 30

per cent were not referred. In 1972, Oxford city had a self-poisoning rate of 245 per 100,000 males (176 in Macclesfield town) and 472 per 100,000 females (388 in Macclesfield town). Bancroft and colleagues (1975) also included three per cent self-injury patients.

Several groups emerged from this study as being at high risk of self-poisoning:

1. Urban dwellers. In general, the risk increased from country to industrialized town. Repeaters were especially likely to live in Macclesfield (Table 1) and this was not the result of the referrals from the large mental hospital in the town. Residential Alderley Edge had a lower incidence than the country, but the absolute numbers were small and therefore unreliable.
2. Females under 25 years old.
3. The divorced and single. In addition, a quarrel with a sexual partner was a precipitating factor in a third of poisonings in this study. A similar figure was reported by Mitchell and Lawson (1974) in Fife.
4. The unemployed, especially males, and social classes 4 and 5.
5. Previous self-poisoners. It is interesting that, as a group, they were no more likely to die from self-poisoning than non-repeaters.
6. Alcohol drinkers.

Several points pertinent to the management of self-poisoning emerge:

1. Half of the patients presented at the hospital within

Table 2. Estimated annual poisonings per 100,000 population by five-year age groups.

	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	≥75
Male	225	310	182	95	138	112	80	62	45	52	53	62	50
Female	535	408	325	300	225	182	145	148	125	85	78	45	48

Table 3. Self-poisonings: total monthly distribution by sex.

	January	February	March	April	May	June	July	August	September	October	November	December
Male	15	15	17	22	26	14	18	19	23	28	18	21
Female	30	32	45	38	52	33	35	39	41	47	29	33
Total	45	47	62	60	78	47	53	58	64	75	47	54

Total monthly variation: $\chi^2 = 22.88$, $df = 11$, $p < 0.02$; male/female correlation: $\phi = 0.687$, $p < 0.05$.

Table 4. Self-poisonings: total weekday distribution by sex.

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Male	28	48	32	28	19	41	40
Female	63	79	52	53	65	63	79
Total	91	127	84	81	84	104	119

Total weekday variation: $\chi^2 = 20.75$, $df = 6$, $p < 0.01$.

two hours of the poisoning, which could suggest that many took steps to ensure they were discovered soon, and were using the poisoning as a cry for help.

General practitioners are well placed to identify those of their patients with multiple self-poisoning risk factors and it is recommended that the medical records of these patients are marked with temporary stickers. When they present with symptoms suggesting personal and social stress, counselling may well be more appropriate than treatment with psychotropic drugs.

2. Although part of the apparent increase in the proportion of acute medical admissions from self-poisoning was due to a reduction in admissions for other conditions, the trend is still disturbing. In Sheffield, Jones (1977) noted that a similar trend would fill all the available emergency medical beds there by 1984.

3. The risk of unconsciousness increased with age (with the exception of males aged between 55 and 64 years and females over 70 years). This may be partly a consequence of deteriorating detoxification mechanisms and partly a sign of increased suicidal intention with age. It appears to be a new finding amongst self-poisoning studies which suggests that particular vigilance is needed in managing older patients at high risk.

Proudfoot and Park (1978) have described a gradual decline from 23 per cent to 15 per cent between 1967 and 1976 in the proportion of patients admitted unconscious (unresponsive to verbal command) in Edinburgh, attributed to a change in drugs used, particularly from barbiturates to benzodiazepines. In this study, the proportion of unconscious patients remained about 20 per cent for each year, but neither was there much change in the drugs used (until 1974 when benzodiazepines largely replaced barbiturates).

4. Half of the patients presented between 17.00 hours and 01.00 hours, traditionally a time of lighter medical and nursing staffing.

Saturdays and Mondays were the most likely days to self-poison, the variation between weekdays being highly significant. Tulloch (1972) found a similar pattern.

As the variation between months was significant, the positive correlation for male and female monthly variation suggests a possible common aetiological factor.

5. Follow-up by a psychiatrist did not reduce the incidence of first-time repeat episodes. Gardner and colleagues (1977) and Buglass and Horton (1974) also found this.

6. Near the end of the study period a local Samaritan counselling service was started. In addition, individual foil packaging of certain drugs and an intensive care unit at Macclesfield Hospital were introduced. The effects of these developments on self-poisoning in East Cheshire need further study.

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Table 5. Marital status: comparison of percentages of self-poisoners and controls.

	Married			
	Single (Separated)	Divorced	Widowed	
Self-poisoners (N = 457)	32	54 (12)	6	8
Controls (10 per cent sample of catchment area)	20	70	1	9

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Addendum

Further information on admissions, times of presentation, unconscious patients, marital status, and agents used is available on request.

Table 6. Social class: comparison of percentages of self-poisoners and controls.

	Professional	Intermediate	Skilled	Semi-skilled	Unskilled
Registrar General's socio-economic groups (1971 census)	3, 4	1, 2, 5, 13, 16	6, 7, 8, 9, 12, 14	10, 15	11
Self-poisoners (N = 320)	10	13	21	28	28
Population catchment area	7	24	50	13	6