

Self-poisoning with Drugs: A Worsening Situation

A. J. SMITH

British Medical Journal, 1972, 4, 157-159

Summary

The incidence of self-poisoning with drugs has doubled in Sheffield in the past 10 years. It now causes almost 1 in 10 of all medical admissions and one in five of all medical emergencies; it is the second most common reason for emergency admission to medical beds.

The average age of the patients has fallen; one in five has previously been admitted to hospital with self-poisoning. The drugs used are normally prescribed by a doctor and the types employed reflect national prescribing trends. It is estimated that over 70,000 self-poisoning cases may be admitted to hospitals in the United Kingdom each year.

Introduction

Many reports published in the past decade have described the growing problem of self-poisoning. Kessel¹ found a high incidence among Edinburgh hospital admissions in the year 1962-3, Evans² described an increasing prevalence in the Oxford area from 1962 to 1965, and Graham and Hitchens³ reported a steady increase in hospital admissions due to deliberate self-poisoning in Cardiff from 1960 to 1965. Later work from Edinburgh⁴ confirmed this trend.

Parkin and Stengel⁵ found an overall incidence for suicide and attempted suicide of 459 and 477 cases in 1960 and 1961 respectively among residents in Sheffield, and Jones⁶ documented the increasing incidence of self-poisoning seen in one Sheffield hospital medical unit from 1955 to 1966.

With these accounts as a baseline it seemed appropriate to reassess the incidence of self-poisoning in Sheffield 10 years after Parkin and Stengel's original survey and to make a more detailed study of patients admitted to one of the city's medical units over the six-year period 1966-71.

Method

The study was conducted in two parts. Firstly, the number of admissions due to drug overdosage in 1970 were obtained from the diagnostic indices of the Royal Hospital and Northern General Hospital, from the registers of Sheffield's three casualty departments (Royal Hospital, Royal Infirmary, and Northern General Hospital), and, where these sources did not provide adequate information, from examination of in-patient records. Additional information was provided by the Sheffield Coroner's office. Secondly, the medical records were scrutinized of every patient admitted to the department of pharmacology and therapeutics, Sheffield Royal Infirmary, with self-poisoning or drug overdose in the years 1966-71.

Self-poisoning in Sheffield

During the year 1970 8,042 patients were admitted to medical wards in the three main hospitals and 3,905 were emergencies. Altogether 754 of the admissions were cases of self-

poisoning, representing 9.4% of all admissions and 19.3% of the emergencies (Table I). Of these 664 came from within the city boundary, 90 from immediately adjacent areas.

TABLE I—Self-poisoning in Sheffield 1970; Admissions to Three Major Hospitals with Casualty Departments

Unit	Total Medical Admissions	Total Medical Emergencies	Cases of self-poisoning		
			No.	% Total	% Emergencies
Northern General Hospital	2,546	1,018	206	8.1	20.2
Royal Hospital	2,934	1,170	326	11.1	27.9
Royal Infirmary	2,562	1,717	222	8.7	12.9
Total	8,042	3,905	754	9.4	19.3

These three hospitals are not the only ones to receive acute medical patients but no others have casualty departments, and their admissions for self-poisoning number not more than one to two a year.* Thus probably almost all the self-poisoning episodes treated in hospital and occurring in the city in 1970 would be included in the figures from the three main hospitals, with the principal exception of patients who died before they could be brought to hospital and whose death would be cause for a coroner's inquiry. Nineteen patients came into this category in 1970, of whom 16 were resident within the city boundary. Thus 773 cases of self-poisoning came to the attention of a Sheffield hospital or the coroner in 1970, and of these 680 were resident in the City of Sheffield itself.

Analysis by District.—For this purpose the data for 1970 from each of the three major casualty departments were pooled. The population for Sheffield postal districts 1-12 was calculated by adding together the population for the 1966 Census enumeration areas comprising the particular postal district. District numbers greater than 12 were excluded deliberately, as these areas have been included only recently within the city boundary or are in process of receiving new influxes of population. Figures obtained were compared with the numbers expected for each district if patients were distributed in proportion to the size of the local population. No consistent trend was apparent (Table II).

TABLE II—Observed Incidence of Self-poisoning, Analysed by Postal District, compared with Expected Numbers if Distribution were Proportional to District Populations

Sheffield Postal District	Population*	Observed Cases of Self-poisoning				No. Expected
		Royal Infirmary	Royal Hospital	Northern General	Total	
1	5,830	1	3	2	6	8.2
2	60,001	18	64	5	87	84.7
3	21,590	12	11	9	32	30.5
4	17,720	4	2	27	33	25.0
5	59,640	13	7	68	88	84.2
6	60,400	74	11	7	92	85.3
7	22,220	4	24	2	30	31.4
8	47,300	4	48	0	52	66.8
9	42,860	32	6	34	72	60.5
10	39,930	9	54	3	66	56.4
11	31,880	2	33	0	35	45.0
12	33,910	5	28	0	33	47.9

* Population based on 1966 Census enumeration district figures.

*Admissions due to drug overdose are commonly seen both at the Children's Hospital and the paediatric unit at the Northern General Hospital, and in 1971 the Children's Hospital received 2,422 medical patients, of whom 1,832 were emergencies. Poisoning was the cause of admission in 190, but with one or two doubtful exceptions these were all the result of accidental rather than deliberate overdose.

Department of Pharmacology and Therapeutics, University of Sheffield

A. J. SMITH, D.M., M.R.C.P., Senior Lecturer

Department of Pharmacology and Therapeutics

ADMISSIONS DURING 1970

Out of 927 patients admitted to departmental medical beds during 1970, of whom 354 were emergencies, 68 were suffering from an episode of self-poisoning. This represents 7.3% of the total admissions and 19.2% of the emergencies—a similar proportion to that given above for the city.

ADMISSIONS DURING 1966-71

In this six-year period 250 cases of self-poisoning were admitted to the unit, compared with 397 patients with myocardial infarcts, 167 with cerebrovascular accidents, and 136 with gastrointestinal bleeding (Table III).

TABLE III—Major Causes of Emergency Admission to Beds of the Department of Pharmacology and Therapeutics 1966-71

Diagnosis	1966	67	68	69	70	71	Total
Myocardial infarct	35	53	56	44	101*	108*	397
Self-poisoning	38	27	30	37	68	50	250
Cerebrovascular accident ..	23	22	23	29	28	42	167
Acute respiratory disease ..	23	11	20	31	27	29	141
Gastrointestinal bleeding ..	26	28	19	12	31	20	136

* Numbers increased by opening of coronary care unit.

Sex and Age Distribution.—Of the 250 patients 154 were female and 96 male, a ratio of 1.6:1. Females greatly outnumbered males in the decades 10-20 and 20-30; thereafter the proportions were more nearly equal (Table IV). The mean age of the 250 patients was 31.6 years, but 76% were aged between 15 and 40. In a previous report on admissions to this unit for 1955-66⁸ the mean age of patients was 36.6 years.

TABLE IV—Age and Sex Distribution of 250 Patients with Self-poisoning Admitted to Department of Pharmacology and Therapeutics, Royal Infirmary, Sheffield, 1966-71

Age (years):	10-	20-	30-	40-	50-	60-	70-80	Total
No. of males ..	19	24	28	13	8	3	1	96
No. of females ..	46	50	22	19	9	5	2	154

Time in Hospital.—Most of the patients spent not more than 24 hours in hospital. Some, however, needed longer periods of treatment, and the mean duration of hospital stay was 2.9 days. This did not change over the six years.

Motive and Background

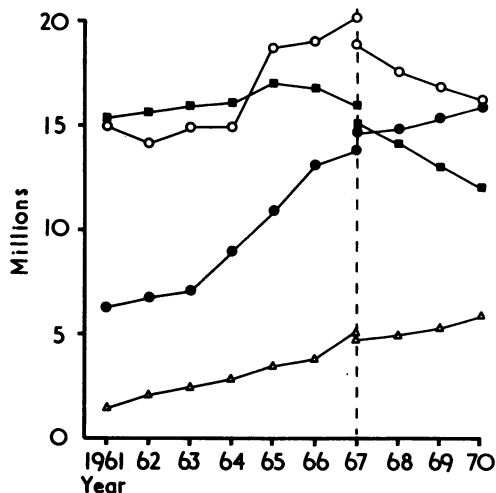
Nature of Episode.—Scrutiny of the records and of the psychiatric opinion given suggested that 82% of the 250 patients made an impulsive gesture and only 18% a determined suicidal attempt. More men (23%) than women (15.6%) made genuine suicidal attempts. The difference between these proportions is not statistically significant. Twenty-five patients (10%) with depressive illnesses presented as self-poisoning cases. Their illness had not been recognized earlier, although from the history subsequently obtained it is clear that most of them had been depressed for weeks or months. In most of the unpremeditated cases (158) the patients had not made previous suicidal gestures or received psychiatric treatment. The trigger factor in these cases was most commonly a domestic crisis—often superimposed on longstanding lack of finance, family planning, or marital fidelity.

Previous Attempts.—Out of 46 patients who made premeditated attempts and 204 who made impulsive gestures, 12 and 40 patients respectively had previously been admitted to hospital for the same reason. This represents 20.8% of the

whole series. Of those with previous attempts 23 patients had been admitted more than twice and five on more than seven occasions.

Drug Dependence.—It is commonly held that the drug-dependent are more prone to suicidal or gesture-type drug overdose. In this series six patients over the age of 35 were dependent on alcohol and six under the age of 25 on heroin, barbiturates, Mandrax (methaqualone and diphenhydramine), cannabis, diazepam, and Chlorodyne (tincture of chloroform and morphine).

Drugs Used.—In over 80% of cases the drugs used had been prescribed by a doctor. The commonest preparations used were barbiturates (30%) followed by tranquillizers (20%) and salicylates (18.8%). Tranquillizers included the commonly used chlordiazepoxide and diazepam and the less frequent phenothiazines, particularly chlorpromazine. Blood was not taken routinely for the detection of alcohol but it had clearly been taken in addition by 38 of the 250 patients. Changing proportions of the major drugs used were evident throughout the six years. The proportions of barbiturate, tranquillizer, and salicylate used in 1960⁵ and 1966-71 bore a reasonable relation to the frequency of their prescription nationally. The increase in the frequency of prescription of tranquillizers and antidepressants and the slow decline in the prescription of barbiturates over the decade 1961-70 are shown in the Chart. The same trend was evident in the selection of drugs for self-poisoning by these patients (Table V).



National prescriptions for common psychoactive drug groups 1961-70. Figures taken from annual reports of the Ministry, and later Department, of Health. Interrupted line in 1967 indicates change adopted in method of calculation of published figures. ○ = Analgesics. ■ = Barbiturate hypnotics. ● = Tranquillizers. △ = Antidepressants.

TABLE V—Comparison of Drugs used in Three Sheffield Self-poisoning Surveys with National Prescribing for Same Compounds

Survey Year(s)	No. of Patients	% Total			
		Barbiturate Hypnotics	Salicylates	Tranquillizers	Antidepressants
Ministry of Health* (1960) ..	—	40.5	39.5	16.3	3.7
Parkin and Stengel (1960-1)* ..	420	45	15	20†	—
Jones (1955-66)* ..	186	55	26	13†	—
Present study (1966-71) ..	250	29.6	18.8	20	6.8
Department of Health* (1970)	—	24.3	32.0	31.8	11.9

* Figures derived from annual report tables. Percentage calculated on basis of cumulative totals for prescriptions for the four drug groups in that year.
† Not separated into subgroups.

Consequences.—Only one of the 250 patients died—a patient with severe barbiturate poisoning who reached hospital several hours after taking a very large dose. For the majority the episode was a trivial admission followed by one

or two outpatient attendances in the psychiatric clinic and no apparent adverse physical sequelae.

Discussion

Parkin and Stengel⁵ surveyed the problem of suicide and attempted suicide in the City of Sheffield immediately before attempted suicide ceased to be a criminal offence in 1961. They stressed the difficulties in making a realistic estimate of the frequency of an event which was commonly not reported to the police by doctors and, if possible, was not made a reason for hospital admission. Their overall estimates for 1960 and 1961 were based on data from general hospitals, mental hospitals, and a sample of the city's general practitioners and they accepted the possibility that their figures might be a slight underestimate of the problem.

The present attempt to provide comparative figures 10 years later is faced with fewer problems. General practitioners in the city now have little reluctance to direct patients suffering from drug overdose to the nearest casualty department, and only a handful are kept at home. Indeed most patients are brought into hospital direct, after an emergency call, and are not seen by their family doctor at this stage. It is more difficult to compare the populations on the basis of self-poisoning *with drugs*, as slightly over 20% of Parkin and Stengel's subjects used violence or coal-gas—methods that did not feature prominently in 1970.⁷ If the numbers of patients using drugs alone are calculated from the figures for 1960 and 1961 (about 80% in each year) and to these are added completed suicides achieved with drugs, totals of 347 (1960) and 322 (1961) are obtained. The 1970 figures for these two groups is 680.

The ratio of suicidal attempts to completed suicides calculated by Parkin and Stengel was 10.7:1 (1960) and 8.5:1 (1967). In this study the ratio was 35.8:1 in 1970. This dramatic change was due to a 50% reduction in completed suicides and an almost 100% increase in self-poisoning.

The population of Sheffield, just under half a million in 1961, is now about 520,000. The increase in self-poisoning episodes is quite disproportionate to the increase in the city's population. One can conclude that episodes of self-poisoning with drugs have doubled in frequency in Sheffield in the decade 1961-70 although the city population has increased by only 4%. Self-poisoning now accounts for almost 1 in 10 of all medical admissions and one in 5 of all medical emergencies. It ranks second only to myocardial infarction as a cause of emergency admission to medical beds in the major Sheffield hospitals.

Our experience is not unique and figures from other units suggest the same trend.^{3,4} It may not be valid to make a direct extrapolation from our figures to self-poisoning in the country as a whole, as there is evidence to suggest that the incidence is not uniform and, for example, is greater in urban than rural areas.^{8,9} However, 680 patients from a population of 520,000 may represent as many as 63,500 cases a year in England and Wales (population 48,590,000; provisional figure 1971 Census) or about 72,000 in the United Kingdom as a whole (population 55,343,000 in 1971). If our figures are representative and patients stay in hospital for an average of three days at a cost of about £10 a day the minimum annual cost to the Health Service of self-poisoning is of the order of £2m.

The analysis by district of the city's self-poisoning cases for 1970 differs from other studies. Each hospital casualty department has its own catchment area but the distribution of self-poisoning in the city as a whole is random and determined only by the size of the district population. Kessel¹ claimed a higher incidence in depressed areas in Edinburgh. Sheffield had no obviously predisposed areas in 1970. The figures for self-poisoning from 1966 to 1971 derived from our own departmental recorders bear the same relation to our total admissions as do the comparable figures for the city and, on

this basis at least, are a valid sample. No selection procedure is imposed on emergency admissions and patients admitted to the unit are a cross-section of the city's medical emergencies.

Three important points emerge from the analysis of the 250 patients. Firstly, the average age of admission is now 31.6 years, whereas it was 36.6 years in the previous survey of Jones.⁶ The average has been reduced by an increase in the number of younger patients, particularly in the decade 15-25 years. This increase is not confined to women as the overall female: male ratio of 1.6:1 shows.

Secondly, most of our patients appeared to have made an impulsive gesture which was not intended to result in death. This has been the finding in many previous reports from other centres. More disturbing, however, is the fact that 52 of the 250 patients had previously made the same sort of gesture, 23 on more than two occasions. This suggests a behaviour pattern, perhaps peculiar to a group of the community for whom it is a means of escaping from or calling attention to a temporarily intolerable situation. To this extent some of the vulnerable patients should be identifiable in any general or hospital practice.

Thirdly, the drugs selected for use are probably dictated not by the patient's knowledge of pharmacology but by simple availability. Kessel¹ said that "in the matter of method, the physician leads and the layman follows." This is borne out by our data. The change in preferred drugs over the decade 1961-70 was paralleled by the change in national prescribing habits—seen most obviously in the increasing use of tranquillizers and the recent decline in the use of barbiturates.

This report is intended to draw attention to the worsening situation in one English city and not to discuss prevention in any detail. Nevertheless, it is difficult to escape some conclusions about prophylaxis. Clearly the medical profession itself by increasing the prescribing of psychoactive drugs (often for trivial causes that should be handled by simple reassurance, counsel, or support) is in danger of breeding an attitude of dependence on pharmacological crutches for all crises. In a drug-conscious society self-poisoning must always be a hazard. Greater care and responsibility in prescribing would undoubtedly reduce the size of the problem. The identification of vulnerable patients in particular should lead to caution in selecting the amounts and type of drug prescribed.

With the inevitable increase in availability of new psychoactive drugs in the future it is difficult to foresee any improvement in the self-poisoning problem without careful thought and planning. The time may have come for an official appraisal of the situation on a national basis and for a concerted discussion of preventive measures.

I wish to thank all who have helped in this work and in particular Mr. D. Gow and Mrs. S. A. Smith, of the Department of Therapeutics, Royal Infirmary, Sheffield; Mrs. G. M. Harrison and Mr. G. G. Newman, of the Sheffield Corporation Planning Office; Miss G. White, Mrs. C. Carr, Mr. F. Eastwood, Mrs. F. L. Jenkins, Miss P. Maunsell, Miss I. Couvret, and Miss M. Briggs, of the records staff of the Sheffield hospitals; Mr. J. Cronin, chief pharmacist, Royal Infirmary; Mr. Atkin and Dr. H. H. Pilling, Sheffield Coroner's office; and medical colleagues who have made available their casualty or inpatient records. Miss M. A. Weeds and Mrs. J. M. Leicester helped in typing the manuscript.

References

- 1 Kessel, N., *British Medical Journal*, 1965, 2, 1265.
- 2 Evans, J. G., *British Journal of Preventive and Social Medicine*, 1967, 21, 97.
- 3 Graham, J. D. P., and Hitchens, R. A. N., *British Journal of Preventive and Social Medicine*, 1967, 21, 108.
- 4 Aitken, R. C. B., Buglass, D., and Kreitman, N., *British Journal of Preventive and Social Medicine*, 1969, 23, 111.
- 5 Parkin, D., and Stengel, E., *British Medical Journal*, 1965, 2, 133.
- 6 Jones, D. I. R., *Practitioner*, 1969, 203, 73.
- 7 Registrar General's Statistical Review of England and Wales for the year 1970, Part 1, p. 479. London, H.M.S.O.
- 8 Stengel, E., in *Suicide and Attempted Suicide*, Chapt. 2, Statistics. England, Penguin Books, 1964.