

PAPERS AND SHORT REPORTS

Trends in parasuicide and unemployment among men in Edinburgh, 1968-82

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Abstract

Between 1968 and 1982 annual unemployment and annual incidence of parasuicide among men in Edinburgh were positively and highly significantly correlated ($r=0.77$). Similarly, they were found to be correlated across the city wards in 1971 ($r=0.76$) and, even more strongly, 1981 ($r=0.95$). Throughout the period the incidence of parasuicide among the unemployed was nearly always more than 10 times higher than among the employed. Men unemployed for more than a year were at much higher risk than those out of work for shorter periods. These findings were considered to be consistent with the view that unemployment, especially if long term, increases the incidence of parasuicide.

The official prediction of an increase in long term unemployment has important implications.

Introduction

The current economic recession has renewed concern about the possible impact of mass unemployment, economic instability, and loss of income on the nation's health. Among the various types of morbidity and mortality that have been studied in this context few have attracted as much controversy as suicide and parasuicide.¹ Most of such investigations have, however, explored the relation between fatal deliberate self harm (suicide) and unemployment. Research into unemployment and non-fatal deliberate self harm (parasuicide, also misleadingly referred to as "attempted suicide") has mostly been restricted to cross sectional studies. These have consistently shown an overrepresentation of the unemployed among people committing

parasuicide compared with the general population² and a greater risk of parasuicide among the unemployed than among the employed.³⁻⁵ Important ecological associations between parasuicide and unemployment, and between parasuicide and indicators of poverty, have also been reported from Edinburgh⁶ and Brighton.⁷ There have, however, been few longitudinal analyses. In this study we exploited the unique archival data on cases of parasuicide admitted to the Regional Poisoning Treatment Centre in Edinburgh to examine the relation between unemployment and parasuicide in the city from 1968 to 1982. For technical reasons our analyses were restricted to men alone.

Parasuicide was defined as a non-fatal act in which a person caused self injury or ingested a substance in excess of any prescribed or generally recognised therapeutic dosage. This included overdoses resulting from habitual misuse of drugs or experimentation with drugs "for kicks" but excluded intoxication with alcohol alone.⁸

Methods

Longitudinal analysis—The numerator used in the calculation of the incidence of parasuicide in men was the number of men admitted to the Regional Poisoning Treatment Centre from an address in Edinburgh, aged 15 years or over, interviewed by a psychiatrist, and diagnosed as a parasuicide. For those who repeated within the same calendar year, only the first or index admission was included. The total achieved thus did not include all cases in the city,⁹ but indirect empirical evidence has suggested that the incidence of parasuicide treated in hospital is a reasonably stable guide to the total incidence of parasuicide. The Registrar General's annual mid-year estimate of the male home population of Edinburgh aged 15 and over was used as the denominator. Annual male unemployment was calculated for each year by expressing the average of 12 counts (one every month) of men registered with local employment and career services offices in the city as a proportion of all men in employment plus those registered as unemployed in the same area in the same year. (The present claimant system did not come into operation until October 1982.)

Cross sectional analyses—These were done twice: once for 1970-2 and once for 1980-2. Unemployment and incidence of parasuicide were calculated for each of the 23 electoral wards (1970-2) or 31 regional electoral divisions (1980-2) of Edinburgh. The numerator for the incidence of parasuicide was the number of men aged 15 or over annually admitted for parasuicide averaged over three years to enhance stability. The denominator was the number of men aged 15

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or over in each district, as given in the census of 1971 or 1981. Unemployment was calculated by dividing the number of men defined in the relevant census as "seeking work" by the total number of men seeking work and "working."

Analysis of relative risk—In addition we calculated for each year incidences of parasuicide among the unemployed and among the employed. The numerator for each incidence was the number of unemployed or employed men admitted during the year for parasuicide, taking as the employment state that recorded at the index admission. The denominators had to be estimated as detailed data were available only for the years of the censuses (1971 and 1981). (For this purpose the data from the censuses were used to estimate the numbers of economically active men in the city in each year covered by the study and subsequently to categorise these men as employed or unemployed.) For 1982 we were able also to calculate incidence of parasuicide by duration of unemployment. Official (unpublished) data from the Manpower Services Commission were obtained on the proportion of unemployed men in Edinburgh who had been unemployed for from zero to four weeks, from five to 26 weeks, from 27 to 52 weeks, or for over 52 weeks. Each unemployed man committing parasuicide was assigned to one of these categories of duration of unemployment.

Analysis of population attributable risk—For each year the population attributable risk of parasuicide resulting from unemployment was calculated by subtracting the incidence of parasuicide among the employed from the incidence of parasuicide for the whole economically active male population and expressing the difference as a proportion of the incidence in the whole economically active population.

If expressed as a percentage the formula is $\frac{I_p - I_e}{I_p} \times 100$ when I_p is the

incidence for all economically active men and I_e is the incidence among the employed. This formula is useful in that it can provide an estimate of the amount by which the incidence of parasuicide might be reduced if the exposure to unemployment were removed.

Statistical analysis—The Pearson product moment correlation coefficient was used throughout to measure the association between unemployment and parasuicide. Partial correlation coefficients were also calculated to describe the relation between these two variables while adjusting for ("partialling out") the effects of additional third variables. All p values obtained were two tailed.

Results

A definite association ($r=0.82$; $p<0.001$) was found between male unemployment in each year and the proportion of economically active men committing parasuicide who were unemployed on admission. The association was particularly clear for more recent years. Thus between 1979 and 1982 male unemployment in the city of Edinburgh increased from 6.8% to 12.8% while the proportion of male parasuicides who were unemployed rose from 41% to 63%.

Figure 1 shows unemployment and incidence of parasuicide among



FIG 1—Unemployment (○—○) and incidence of parasuicide (●—●) in men in Edinburgh, 1968-82.

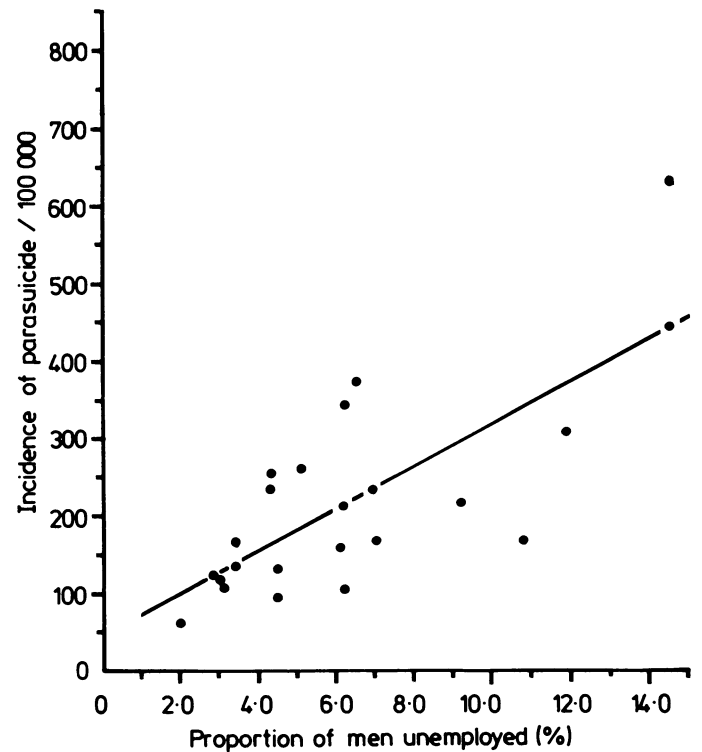


FIG 2—Relation between male unemployment (1971 Census) and incidence of parasuicide in men across 23 city wards in Edinburgh, 1970-2.

men in Edinburgh for 1968-82. The temporal association at zero lag was strongly positive overall ($r=0.77$; $p<0.001$), although occasional contradictory trends were evident, as in 1974-5 and 1981-2 (rising unemployment being accompanied by a falling incidence of parasuicide) and in 1973-4 (falling unemployment coinciding with a rising incidence of parasuicide). When unemployment was lagged, the correlation was progressively reduced ($r=0.65$; $p<0.02$ at one year lag and $r=0.41$; $p>0.10$ at two year lag).

Figures 2 and 3 show the association between unemployment and incidence of parasuicide in men across geographical areas of Edinburgh in 1970-2 and 1980-2. In both periods the ecological correlations were highly significant ($r=0.76$; $p<0.001$ in 1970-2; $r=0.95$; $p<0.001$ in 1980-2); the increase in the correlations was also significant ($p<0.001$). High unemployment and a high incidence of parasuicide were generally found in the same areas in 1970-2 and 1980-2.

The relation between unemployment and parasuicide was further examined to determine if the connection between them could be ascribed to a common third factor such as social class, an obvious example as both parasuicide and unemployment vary considerably, and in the same direction, according to socioeconomic state. Partialling out the effects of the composition, in terms of social class, of the city districts reduced the magnitude of the observed correlations (from 0.76 to 0.51 in 1970-2 and from 0.95 to 0.81 in 1980-2), but the resulting correlations remained significant for both periods. Another and more subtle analysis was possible for 1970-2, as for those years a study had been completed on the social ecology of Edinburgh, using 40 census items and 62 variables of health, morbidity, and a range of social items such as housing and education; these had been reduced by principal components analysis to eight summary measures or "problem variables."¹⁰ Partialling out in turn the effects of each of these eight variables again did not lead to any important change in the observed correlations between unemployment and parasuicide except for one instance; on entering the problem variable reflecting indicators of poverty the partial correlation fell to a non-significant level ($r=0.13$). Thus unemployment appears to be associated with parasuicide only in so far as it relates to poverty or to some other variable closely connected with poverty. Data were not available, unfortunately, to perform this analysis for 1980-2.

Table 1 presents individual level data for 1968 to 1982. The incidence of parasuicide among the unemployed could be seen to have fallen, especially since 1973, though the incidence among the employed in general rose until 1976, thereafter fluctuating. The relative risk ratio also tended to fall until 1976, since when it remained fairly steady at about 11-12:1. Thus a generally upward movement in

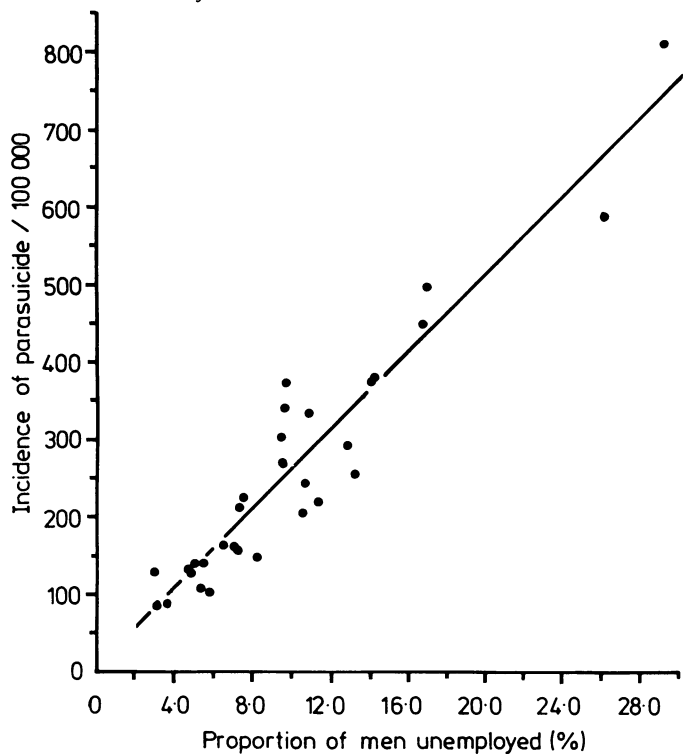


FIG 3—Relation between male unemployment (1981 Census) and parasuicide in men across 31 regional electoral divisions in Edinburgh, 1980-2.

TABLE II—Incidences of parasuicide in 1982 in men in Edinburgh city by duration of unemployment

	Incidence of parasuicide/100 000	Ratio of relative risk
Duration of unemployment (weeks):		
<4	1012	8.8
5-26	615	5.4
27-52	1193	10.4
>52	2164	18.9
Among all unemployed men	1345	11.8
Among all employed men	114	

Discussion

Our results are dependent inter alia on the assumption that the general state of employment of patients admitted to the regional poisoning treatment centre was representative of that of the total population of male parasuicides. A special inquiry indicated that the unemployed were underrepresented in the achieved sample. Hence the differences we found in the incidence of parasuicide between the employed and the unemployed are probably underestimates. A second possible source of error was failure to collect data on patients who discharged themselves prematurely from the regional poisoning treatment centre. We have no reason to suppose that the distribution by employment state among this group changed over the years and that our findings regarding temporal trends therefore require adjustment.

We have reported three sets of findings. The first set comprised substantial positive correlations between unemployment and the incidence of parasuicide in men in Edinburgh from 1968

TABLE I—Incidences of parasuicide among employed and unemployed men in Edinburgh city and measures of relative and population attributable risk, 1968-82

Year	Incidence of parasuicide/100 000			Relative risk ratio*	Population attributable risk†	Maximum percentage of overall incidence attributable to unemployment‡
	Among unemployed	Among employed	Among all economically active			
1968	2824	98	172	29.0	74	43.2
1969	2284	117	188	19.6	71	38.1
1970	1955	122	204	16.1	82	40.4
1971	2302	115	238	20.0	123	51.5
1972	2106	141	252	14.9	111	44.0
1973	2458	134	240	18.3	106	44.2
1974	2374	149	247	15.9	98	39.6
1975	1991	139	239	14.4	100	42.1
1976	2052	173	299	11.8	126	42.0
1977	1779	153	284	11.6	131	45.9
1978	1647	150	257	11.0	107	41.8
1979	1523	160	253	9.5	93	36.6
1980	1663	143	260	11.6	117	45.0
1981	1743	154	322	11.3	168	52.3
1982	1345	114	272	11.8	158	57.8

*Parasuicide incidence among the unemployed to parasuicide incidence among the employed.

†Parasuicide incidence among all economically active men minus parasuicide incidence among employed men.

‡Population attributable risk divided by parasuicide incidence among all economically active men.

unemployment over the 15 years was accompanied by a declining or fairly static relative risk ratio.

For 1980-2 we also examined the individual level relation between unemployment and incidence of parasuicide within each social class. As is usually found, the incidence of parasuicide varied indirectly with social class—that is, the highest incidence was found in class V. This pattern was evident among the employed and the unemployed separately. For all social classes the relative risk ratio was at least eight to one, with the highest ratios in classes I and II combined and in class V.

Table II shows a breakdown of incidence of parasuicide in 1982 by duration of unemployment. Though the relative risk ratio did not increase directly with increasing duration of unemployment, the highest rates were found among the long term unemployed. In particular, men in Edinburgh without work for over a year were roughly 19 times more likely to harm themselves deliberately than employed men. Seventy seven per cent of the 218 unemployed male parasuicides had been out of work for over six months compared with 56% of the general population of unemployed men in Edinburgh; the respective proportions for those unemployed over a year were 57% and 35%.

to 1982 and geographically across the city in 1971 and, even more appreciably, 1981. We noted the virtual disappearance of the ecological association between parasuicide and unemployment in 1971 after controlling for poverty, suggesting that unemployment causes parasuicide via its impact on standards of living.

Ecological analysis cannot unravel the complex interrelation between these variables. Indeed, the two variables cannot necessarily be assumed to be linked within the same individuals on the basis of a strong association between unemployment and incidence of parasuicide. That difficulty does not arise with our second set of data on the incidences of parasuicide among the unemployed and among the employed since 1968. The very high incidence among the unemployed in 1968 was striking and presumably reflected a high degree of psychological and social impairment among the comparatively few people who remained unemployed in a time of affluence. The steady decline in their incidence of parasuicide over the next 15 years we interpret as reflecting the dilution of the "unemployable" group by others

whose state was less and less a consequence of personal handicap and more and more the outcome of impersonal, economic factors. It is a moot point whether in times of mass unemployment handicap at an individual level continues to be of much significance.¹¹ The incidence of parasuicide among the unemployed, however, always remained dramatically higher than among the employed and only once in the years 1976-82 was the relative risk less than 10-fold (table I). For clarity we would emphasise that the decline in the incidence of parasuicide among the unemployed has been more than offset by the increase in their numbers. The population attributable risk has shown a tendency to rise in line with the upward trend in unemployment despite the decline in relative risk (table I), and the proportion of the overall rate attributable to unemployment increased from 36.5% in 1979 to 57.8% in 1982 (table I). We will shortly report more detailed estimates.

Our third notable finding was the role of long term unemployment. After one year the risk approached double that for shorter periods. Such a relation is of course in line with the hypothesis that unemployment is a cause of parasuicide, though other interpretations are (just) possible. But whether unemployment is directly causal or not, the association of parasuicide with chronic unemployment is clear. That about 45% of men unemployed at present have been out of work for over a year and that this figure is forecast by the Manpower Services

Commission to climb even higher in the next few years is particularly disturbing. The prospect in terms of both personal distress and future incidence of parasuicide is ominous.

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Spectinomycin as initial treatment for gonorrhoea

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Abstract

The prevalence of penicillinase producing *Neisseria gonorrhoeae* at this hospital increased exponentially from <0.5% in 1978 to 6.5% of all isolates in 1982. In January 1983 first line treatment for uncomplicated heterosexual anogenital gonorrhoea was therefore changed from ampicillin and probenecid to spectinomycin. This subsequently cured 95% of cases seen at the Praed Street Clinic. Although there was an initial fall in the monthly isolation rate of penicillinase producing *N gonorrhoeae* after the introduction of spectinomycin, this was not maintained. The exponential increase in the prevalence of the strain did slow in 1983, rising to only 8.7%. This, however, may have reflected a general decline in the rate of increase of penicillinase producing *N gonorrhoeae* throughout Britain.

The failure to influence the prevalence of penicillinase

producing *N gonorrhoeae* to any great degree may have been due in part to spectinomycin resistance in both penicillinase producing and non-penicillinase-producing *N gonorrhoeae*. All of the isolates appeared identical, apart from the presence of the 4.4 megadalton plasmid in penicillinase producing *N gonorrhoeae*, but they could not be linked epidemiologically. Changing treatment in only one of the many venereal diseases clinics in London, where patients have open access to all such clinics, is unlikely to affect the prevalence of penicillinase producing *N gonorrhoeae*. This has probably been more important than spectinomycin resistance in limiting the effectiveness of spectinomycin in reducing the prevalence of the strain.

Introduction

Penicillin has been the mainstay of treatment for gonorrhoea since the 1940s but is inactive against penicillinase producing *Neisseria gonorrhoeae*, which first appeared in 1976.^{1 2} Gonorrhoea caused by that strain necessitates treatment with penicillinase stable antibiotics. McCutchan *et al* and McCormack suggested that a penicillinase stable antibiotic should be used as first line treatment for gonorrhoea when the prevalence of penicillinase producing *N gonorrhoeae* exceeded 5%.^{3 4} Thus in January 1983 spectinomycin was introduced as first line treatment for uncomplicated anogenital gonorrhoea in women and heterosexual men attending the Praed Street Clinic at this hospital.

We report the effect of spectinomycin on the prevalence of penicillinase producing *N gonorrhoeae* in a large open access clinic for sexually transmitted diseases and summarise our clinical, epidemiological, and laboratory experience with spectinomycin resistant *N gonorrhoeae*.

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