
Doctors who kill themselves: a study of the methods used for suicide

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Summary

Medical practitioners have a relatively high rate of suicide. Death entry data for doctors who died by suicide or undetermined cause between 1979 and 1995 in England and Wales were used to compare methods used for suicide by doctors with those used by the general population. Methods used were analysed according to gender, occupational status and speciality, to assess the extent to which access to dangerous means influences the pattern of suicide. Self-poisoning with drugs was more common in the doctors than in general population suicides (57% vs. 26.6%; OR = 3.65, 95% CI 2.85–4.68), including in retired doctors. Barbiturates were the most frequent drugs used. Half of the anaesthetists who died

used anaesthetic agents. Self-cutting was also more frequently used as a method of suicide. The finding that the greater proportion of suicide deaths in doctors were by self-poisoning may reflect the fact that doctors have ready access to drugs, and have knowledge of which drugs and doses are likely to cause death. The specific finding that a large proportion of suicides in anaesthetists involved anaesthetic agents supports this explanation. Availability of method may be a factor contributing to the relatively high suicide rate of doctors. This fact might influence clinical management of doctors who are known to be depressed or suicidal.

Introduction

Suicide risk appears to be elevated in medical practitioners.^{1–7} A review of studies across different countries indicated a relative risk varying between 1.1 and 3.4 in male doctors and 2.5 and 5.7 in female doctors.⁶ It has been suggested that the increased risk in medical practitioners is related to access to dangerous means of suicide.^{1–3} Greater use of drugs for suicide by doctors compared to other occupational groups has been noted in doctors in England and Wales, especially males,² and in doctors in other countries.^{8,9} We conducted a detailed study of the methods used for suicide by doctors, including a focus on possible evidence that access influences choice of method. We compare methods with those used by the general population, and, within doctors, according to gender, working status, speciality and time period.

Methods

Study population

The Office for Population Censuses and Surveys (now Office for National Statistics) supplied us with death entries for all deaths in England and Wales, between 1979 and 1995, of individuals resident in the UK whose occupation was recorded as medical practitioner (or equivalent, e.g. 'doctor of medicine', 'consultant anaesthetist', 'surgical registrar') where an inquest verdict of suicide (ICD9 codes E950–E959) or undetermined cause ('open verdicts'; E980–E989 excluding E988.8)¹⁰ had been registered. The open verdicts were included because there is ample evidence that the majority of these are suicides.¹¹ All the deaths in these two categories are henceforth referred to as 'suicides'. The death entries included information on gender, age, date of death, and method of suicide (including ICD9 E code).

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Methods used for suicide

The methods for suicide were classified as self-poisoning (including carbon monoxide), self-injury or both. The methods of self-poisoning by drugs were subdivided into categories which reflected the important classes of drugs likely to be used by doctors (e.g. anaesthetic agents, analgesics, barbiturates), rather than the broad ICD groupings.

Comparison with general population suicides

In order to compare methods used for suicide by doctors with those in the general population we obtained data on all deaths in England and Wales in the suicide and open verdict categories for males and females between 1979 and 1995 from the Office for National Statistics.¹² We subtracted the doctors' deaths for those years. For this comparison we retained the broad ICD9 categories (E950–E959), except that we subdivided E950 into E950.0–E950.5 (i.e. drugs) and E950.6–E950.9 (i.e. poisons), and similarly for E980–E989 (excluding E988.8). We have restricted the comparisons to the 25–64-year age group for males and the 25–59-year age group for females, in keeping with the traditional gender differences in ages of retirement. This was in order to focus particularly on patterns and differences during the period of working life of doctors.

Identification of working status and medical specialities

We were notified of the deaths of 329 individuals. We identified the working status (working vs. retired/not working) and specialities of the doctors from the death entries, the Medical Directory (for the relevant years), and the General Medical Council. If we were unable to obtain information about working status, we made an assumption that all males under 65 years of age and all females under 60 years of age were working. A total of 86 doctors were retired and 243 were working. We have restricted analyses by speciality to those who were working. We were able to identify the speciality in 191/243 (78.6%) cases.

Statistical analysis

The analyses were conducted using SPSS for Windows 6.1 and Epilnfo 6.¹³ These included χ^2 , χ^2 for linear trend and odds ratios.

Results

Study population

Of the 329 medical practitioners who died by suicide ($n=273$, 83.0%) or undetermined cause ($n=56$,

17.0%) between 1979 and 1995, 249 (75.7%) were males and 80 (24.3%) females. The characteristics of the doctors and their deaths are shown by gender in Table 1. There were similar distributions of suicides and open verdicts in the two genders ($\chi^2=0.04$, $p=0.83$). The age distribution differed between the two genders ($\chi^2=10.30$, 3df, $p<0.02$), with a greater proportion of females being <35 years of age. There was little difference between the genders in the proportions working or retired at the time of death ($\chi^2=0.73$, $p=0.39$).

Comparison with suicides in the general population

There were marked differences between the methods used for suicide by the doctors and those used by the rest of the general population of suicides (Table 2). The most notable difference was that *poisoning by drugs* was far more common among the doctors (OR 3.65, 95% CI 2.85–4.68), a difference which applied to both males (OR 5.00, 95% CI 3.77–6.62) and females (OR 2.06, 95% CI 1.19–3.59). The absolute percentage difference between the use of self-poisoning with drugs by the doctors and suicides in general was more marked for males (35.3%) than females (17.7%). *Cutting and piercing* were also significantly more common in the doctors (OR 3.18, 95% CI 1.85–5.40), although the number involved was relatively small. On the other hand, several methods were less frequent in the doctors. These included, in males only, *hanging and suffocation* (OR 0.44, 95% CI 0.29–0.67) and *gas (including carbon monoxide)* (OR 0.32, 95% CI 0.20–0.50). For both genders, fewer doctors died by *drowning* (OR 0.45, 95% CI 0.23–0.88), *jumping from a height* (OR 0.15, 95% CI 0.03–0.61), and *other and unspecified means* (OR 0.37, 95% CI 0.18–0.71).

Details of methods used for suicide

Self-poisoning was somewhat but not significantly more frequent in the female doctors than the male doctors (Table 1). The most common drugs used for self-poisoning were barbiturates (Table 3). A paracetamol and dextropropoxyphene combination (Distalgesic, Coproxamol) was involved in 15 of the 31 cases in which analgesics (excluding anaesthetic agents) were used. Opiate overdoses were far more common in the male doctors than the female doctors who self-poisoned (OR 11.03, 95% CI 1.72–459.17). There were no other statistically significant differences for specific categories of drugs, although larger proportions of female doctors used analgesics or antidepressants.

Table 1 Suicides in doctors in England and Wales: demographic characteristics and method of death by gender

	Males (<i>n</i> =249)	Females (<i>n</i> =80)	Both genders (<i>n</i> =329)
<i>Verdict</i>			
Suicide	206 (82.7)	67 (83.8)	273 (83.0)
Undetermined	43 (17.3)	13 (16.3)	56 (17.0)
<i>Age (years)</i>			
<35	57 (22.9)	33 (41.3)	90 (27.4)
35–49	77 (30.9)	19 (23.8)	96 (29.2)
50–64	76 (30.5)	19 (23.8)	95 (28.9)
65+	39 (15.7)	9 (11.3)	48 (14.6)
<i>Occupational status</i>			
Working	181 (72.7)	62 (77.5)	243 (73.9)
Retired	68 (27.3)	18 (22.5)	86 (26.1)
<i>Method of suicide</i>			
Self-poisoning	161 (64.7)	58 (72.5)	219 (66.6)
Self-injury	80 (32.1)	21 (26.3)	101 (30.7)
Both	8 (3.2)	1 (1.2)	9 (2.7)

Figure are numbers (%).

The most common method of self-injury was hanging (Table 4). The main gender differences in methods of self-injury were that shooting was somewhat more common in the males (15.9% vs. 4.5%) and asphyxiation/suffocation was somewhat more common in the females (22.7% vs. 11.3%), but neither to a statistically significant extent. These comparisons are based on smaller numbers than those for self-poisoning.

Working doctors compared with retired doctors

There was little difference in the proportionate use of self-poisoning (67.9% vs. 62.8%) and self-injury (29.2% vs. 34.9%) between the working and the retired doctors, either for all cases combined or within each of the two genders. Nor were there major differences in the specific methods used for either self-poisoning or self-injury between the working and retired doctors, except that 8.2% (*n*=20) of the working doctors used anaesthetic agents for self-poisoning, compared with none of the retired doctors, and seven used insulin compared with none of the retired doctors.

Trends over time

When the specific methods used were examined over four time periods (1979–82, 1983–86, 1987–90, 1991–95), the use of barbiturates for self-poisoning had declined (36.9%, 15.6%, 20.0%, 11.1%; χ^2 test for linear trend=10.80, $p<0.002$). The use of opiates had increased in the most recent period (9.2%, 13.3%, 5.5%, 20.6%), but there was no overall statistically significant trend ($\chi^2=2.26$,

$p=0.13$). Hanging was a less common method of self-injury during 1979–82 (18.8%) compared to the later three time periods (36.8%, 31.8%, 29.4%), but again there was no significant trend over time ($\chi^2=0.13$, $p=0.72$). More than half of the deaths by asphyxiation/suffocation (8/15), at least half of which involved plastic bags, occurred in 1983–86.

Methods of suicide according to speciality

The most striking finding for methods used by doctors working in particular specialities was that overdoses of anaesthetic agents were used by half of all anaesthetists (10/20) compared with a much smaller proportion of the other working doctors (10/223, 4.5%; OR 21.30, 95% CI 6.41–72.77). No other speciality associations were found. Anaesthetic agents were used by only 2/12 surgeons. It was notable that none of the psychiatrists (*n*=13) who self-poisoned used any type of psychotropic agent for self-poisoning. Of 59 general practitioners who self-poisoned, in 16 (27.1%) cases barbiturates were involved, in 12 (20.3%) opiates and in 10 (10.9%) carbon monoxide.

Discussion

Difference between doctors' suicides and those in the general population

Marked differences were found in the methods used for suicide by doctors and those used by the general population. In particular, a greater proportion of doctors died from overdoses. A similar finding has been reported from other countries.^{8,9} The excess of

Table 2 Methods involved in deaths (suicides and open verdicts) of doctors compared with the general population* in England and Wales, 1979–1995

Method (ICD9 E code)	Males (aged 25–64 yrs)		Females (aged 25–59 yrs)		Both genders	
	Doctors	General population	Doctors	General population	Doctors	General population
Poisoning—drugs (950.0–950.5, 980.0–980.5)	115 (54.8)	8518 (19.5)	40 (64.5)	7220 (46.8)	155 (57.0)	15738 (26.6)
Hanging, strangulation, suffocation (953.0–953.9, 983.0–983.9)	27 (12.9)	11022 (25.2)	9 (14.5)	2400 (15.6)	36 (13.2)	13422 (22.7)
Gas, incl. carbon monoxide (951.0–951.8, 952.0–952.9, 981.0–981.8, 982.0–982.9)	21 (10.0)	11388 (26.1)	6 (9.7)	1335 (8.7)	27 (9.9)	12723 (21.5)
Cutting and piercing (956, 986)	13 (6.2)	925 (2.1)	3 (4.8)	213 (1.4)	16 (5.9)	1138 (1.9)
Firearms and explosives (955.0–955.9, 985.0–985.9)	12 (5.7)	2136 (4.9)	0 (0.0)	139 (0.9)	12 (4.4)	2275 (3.8)
Drowning (954, 984)	8 (3.8)	2969 (6.8)	2 (3.2)	1609 (10.4)	10 (3.7)	4578 (7.8)
Poisoning—other (950.6–950.9, 980.6–980.9)	4 (1.9)	657 (1.5)	0 (0.0)	229 (1.5)	4 (1.5)	886 (1.5)
Jumping from a high place (957.0–957.9, 987.0–987.9)	2 (1.0)	1931 (4.4)	0 (0.0)	841 (5.5)	2 (0.7)	2772 (4.7)
Other & unspecified means (958.0–958.9, 959, 988.0–988.7, 988.9, 989)	8 (3.8)	4136 (9.5)	2 (3.2)	1428 (9.3)	10 (3.7)	5564 (9.4)
Total	210	43682	62	15414	272	59096

* Excluding doctors. Data are numbers (%).

Table 3 Methods used for suicide: self-poisoning

Method	Males (n=169)	Females (n=59)	Both genders (n=228)
Barbiturates	39 (23.1)	10 (16.9)	49 (21.5)
Gas (including CO)	29 (17.2)	7 (11.9)	36 (15.8)
Analgesics	17 (10.1)	14 (23.7)	31 (13.5)
Opiates	27 (16.0)	1 (1.7)	28 (12.3)
Antidepressants	9 (5.3)	13 (22.0)	22 (9.6)
Anaesthetic agents	17 (10.1)	3 (5.1)	20 (8.8)
Minor tranquilizers	15 (8.9)	5 (8.5)	20 (8.8)
Major tranquilizers	5 (3.0)	3 (5.1)	8 (3.5)
Insulin	4 (2.4)	3 (5.1)	7 (3.1)
Other prescribed drugs	11 (6.5)	5 (8.5)	16 (7.0)
Chemicals	3 (1.8)	1 (1.7)	4 (1.7)
Recreational drugs	2 (1.2)	0	2 (0.9)
Drug not known	16 (9.5)	3 (5.1)	19 (8.3)

Data are numbers (%). The total exceeds the number of individuals, because several doctors used more than one substance.

Table 4 Methods used for suicide: self-injury

Method	Males (n=88)	Females (n=22)	Both genders (n=110)
Hanging	27 (30.7)	7 (31.8)	34 (30.9)
Cutting	17 (19.3)	4 (18.2)	21 (19.1)
Shooting	14 (15.9)	1 (4.5)	15 (13.6)
Drowning	9 (10.2)	3 (13.6)	12 (10.9)
Asphyxiation/suffocation*	10 (11.3)	5 (22.7)	15 (13.6)
Jumping in front of vehicle	3 (3.4)	2 (9.1)	5 (4.5)
Burning	2 (2.3)	0	2 (1.8)
Jumping from a height	2 (2.3)	0	2 (1.8)
Means not known**	4 (4.5)	0	4 (3.6)

Data are numbers (%). * Includes suffocation by plastic bag and by means unknown. ** Multiple injuries, means not stated.

self-poisoning deaths in the doctors compared with suicides in the general population was somewhat more marked in males than females, although self-poisoning was generally more common in females, both in doctors and the general population. There are at least two factors which may contribute to the greater use of self-poisoning as a method of suicide in doctors. The first is the ready availability of medicinal drugs to most working doctors. The second is the specific knowledge doctors have about the dangers of drugs, and hence which drugs and what doses are most likely to cause death. It also seems likely, but cannot be proven from our findings, that these factors contribute to the relatively high risk of suicide in doctors. Certainly, availability of a dangerous method appears to be an important contribution to suicide risk in general, for example in circumstances in which guns are readily available.¹⁴⁻¹⁶ The fact that retired doctors who committed suicide also tended to use medicinal drugs suggests that having been a doctor may also serve to model this method

of suicide for some individuals, although continuing access to medication might be a further factor.

Of the methods used less often in doctors' suicides compared to suicides in the general population (hanging, strangulation and suffocation, gas, including carbon monoxide, drowning, jumping from a height), all would have been equally available to both groups (except perhaps cars, which would be owned by nearly all doctors). On the other hand it might be argued that doctors would have greater knowledge of how to ensure death by cutting and that this might explain why more doctors used this method, although the numbers involved were relatively small.

The relatively frequent use of barbiturates for self-poisoning (although this declined in parallel with reduced prescribing, as was the case in the general population)³ has been reported in other studies of doctors' suicides⁹ and also probably highlights the contribution of access and knowledge of what is more likely to be fatal. This may also explain the

similarly frequent use of the dangerous paracetamol and dextropropoxyphene analgesic combination. The comparatively larger number of deaths by asphyxiation, often involving plastic bags, in the early to mid 1980s, reflected a pattern in the general population¹² which probably resulted from the publicity surrounding the recommendation of this method by EXIT, a voluntary euthanasia organization.¹⁷

The influence of speciality

The role of availability in determining methods used for suicide is strikingly illustrated by the fact that half of the anaesthetists who committed suicide used anaesthetic agents in these acts. This may also explain the relatively frequent use of barbiturates and especially opiates for suicide by general practitioners. On the other hand it is of interest that no psychiatrists who died took a psychotropic agent in overdose. This might reflect the fact that psychiatrists rarely have direct contact with the drugs they prescribe, but is perhaps more likely to be due to the psychiatrists being aware that many psychotropic agents are less dangerous in overdose than other drugs. The greater use of opiates for self-poisoning by male doctors compared to female doctors may be due to a higher incidence of substance misuse among male doctors.

Methodological issues

This study has some methodological limitations. These mostly relate to our reliance on information from official death entries. The information contained in these is relatively sparse. There were no details, for example, of the amounts of substances used for self-poisoning that might have allowed more detailed comparison with general population suicides by overdose. We had to make assumptions about working status based on age in cases where this could not be determined from the death entries or through searching the Medical Directory and contacting the General Medical Council. Details of medical speciality were missing for nearly a quarter of the working doctors. However, the findings are based on a relatively large number of cases and, where comparison was feasible, are in keeping with those from other studies. We are confident, therefore, that the findings are reliable.

Prevention

Access to dangerous methods probably plays a role in the relatively high risk of suicide of doctors. While restricting access to dangerous methods is an important element in overall suicide prevention^{18,19} clearly access could not be restricted in doctors in general

as this would undermine their ability to carry out their clinical responsibilities. Such a measure might, nonetheless, be relevant to decisions about whether or not a doctor should continue to work while suffering from depression, especially if suicide risk is judged to be present.

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