

Case-control study of GP attendance rates by suicide cases with or without a psychiatric history

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SUMMARY

Background. Targets for reduction in suicide deaths have been set against a background of an increasing number of people committing suicide. It is often assumed that a reduction can be effected by increasing the detection in primary care of patients at risk. This presupposes that there are indicators that enable suicide risk to be detected reliably.

Aim. To compare the characteristics of those who commit suicide with an age- and sex-matched control group in terms of level of general practitioner attendance, diagnosis and pharmacological treatment of mental illness, and to compare those suicides with and without a psychiatric history in terms of general practitioner attendance and history of pharmacological treatment.

Method. From a total of 48 deaths attributed to suicide and undetermined causes in the Forth Valley in 1993, general practice case notes were located for 41. Live controls were matched to index cases by age, sex and practice. Information on consultations, referrals to secondary care, medication and diagnoses in the previous 10 years was extracted from general practice and, for suicides, psychiatric case notes.

Results. Over the 10-year period, suicide patients attended their general practitioner at a higher level than control subjects. However, the number of suicide patients who attended their general practitioner in the month before their death did not differ in comparison with control subjects over a similar period. Suicide cases, in comparison with control subjects, were more likely to have received a psychiatric diagnosis from their general practitioner, been prescribed psychotropic medication and received referral to specialist mental health services. Those suicide patients with a psychiatric history had a significantly higher number of general practitioner consultations than those without a psychiatric history in four out of the five years preceding death. Those suicide patients without a psychiatric history did not differ significantly from control subjects on any of the variables assessed.

Conclusion. For those people committing suicide who do not have a psychiatric history and whose consultation patterns do

not differ from the norm, it is difficult to suggest how general practitioners might improve their detection of relevant suicidal risk factors. For those patients with a psychiatric history who commit suicide, until we have more detailed information regarding the specific content of general practitioner consultations before death and how these differed from other consultations of the deceased, then it is premature to assume that general practitioners are failing to identify indicators of impending suicide.

Keywords: suicide; consultation frequency; psychiatric disorders.

Introduction

IN the United Kingdom, there are at least 5000 suicides each year, accounting for 1% of all deaths. Two targets for reducing the suicide rate have been outlined in the *Health of the Nation* White Paper.¹ One of these is to reduce the overall suicide rate by at least 15% by the year 2000. The second is to cut the suicide rate among the mentally ill from the lifetime estimate of 15% in 1990 to no more than 10% in 2000.

In terms of reducing the number of suicides, there appears to be an assumption that this will be achieved, at least in part, by an enhanced detection in primary care of individuals at risk, and thereafter by more appropriate intervention and management.²⁻⁴ However, this presupposes that general practitioners (GPs), in particular, are (1) failing to detect adequately the risk factors associated with suicide, and (2) failing to prescribe adequately and make secondary referral.

Unfortunately, there is a relative lack of studies that have investigated whether GPs are more or less likely to have made psychiatric diagnoses, prescribed psychotropic medication and made secondary psychiatric referral among a suicide group in comparison with age- and sex-matched controls. Furthermore, there is a lack of comparative information regarding the characteristics of suicide cases with and without a psychiatric history.

The present study, therefore, has three main aims. First, to assess whether those who commit suicide had a higher level of GP attendance than age- and sex-matched control subjects. Second, to assess whether GPs are more likely to have made a psychiatric diagnosis, prescribed psychotropic medication and made secondary psychiatric referral among a suicide group, in comparison with control subjects. Third, to compare and contrast those suicides with and without a psychiatric history in terms of GP attendance and pharmacological treatments.

Method

A total of 48 deaths of Forth Valley residents in 1993 were attributed to suicide and undetermined causes (ICD Ninth Revision, Codes E950-959; E980-989). Owing to seven missing case notes, the final suicide cohort numbered 41. No obvious bias was noted in terms of the age or sex of those for whom case notes were missing.

A group of control patients from the same individual GP practices as the suicide patients was selected randomly and matched by year of birth and sex to the suicide group. Control patients

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were selected by proceeding alphabetically through the patient card index from the place where the index suicide patient was located until the first patient matched for age and sex was located.

Data collection entailed a review of general practice and, where appropriate, psychiatric hospital case notes for the suicide patients and general practice case notes only for the control group. Information for each patient was recorded over a 10-year period beginning in 1993 from a date nearest this suicide's actual date of death. Control subjects' data covered the same period as their index suicide match.

The characteristics noted for both suicide and control groups included age and sex, history of psychotropic and non-psychotropic medication, and frequency of GP consultations. Information was also collected on the number of referrals to secondary care and mental health specialists, the number of laboratory and radiological tests ordered, and the number of self-referrals to accident and emergency departments. Hospital admissions in the 10-year period were also noted. Finally, all types of mental health diagnoses made by GPs, psychiatrists and psychologists over the 10-year period were recorded. The above methodology is similar to that previously used by other workers.^{5,6}

Statistical analysis involved the use of paired and unpaired two-tailed *t*-tests to calculate differences between suicide and control groups, and between suicides with or without a history of psychiatric illness respectively. For non-parametric comparisons, the McNemar test was used.

Results

The suicide group comprised 32 men and nine women with a mean age of 42 years. The mean age of male suicide patients was 40 years, while for women the mean age was 52 years. The most common method of suicide was overdose, accounting for 17 cases (including all nine female suicide cases). This was followed by nine hangings, eight carbon monoxide poisonings, four deaths by shotgun, two drownings and one fatal fall.

General practitioner attendance rates

As shown in Table 1, over the 10-year study period suicide patients attended their GPs at an overall higher rate than control patients ($P<0.01$). For 5 years out of the 10-year study period, suicide patients had a statistically significantly higher GP attendance level than controls, although no consistent pattern can be seen in this increased attendance.

No statistically significant difference was found in the proportion of suicide patients who had attended in the month before death (34%) in comparison with the proportion of matched control subjects who had done likewise (24%).

Mental health diagnoses and secondary psychiatric referral

In relation to mental health diagnosis, a statistically significant difference was noted between cases and control subjects, with 26 (63%) of the 41 suicide cases having such a diagnosis in comparison with seven (17%) of the control group ($P<0.001$). The range of mental health diagnoses applied to both suicide and control patients by GPs and psychiatrists is outlined in Table 2.

A total of 17 (41%) suicide patients received a diagnosis of depression compared with five (12%) control subjects ($P<0.01$). Of those 17 suicides with a history of depression, in all cases the initial diagnosis was made by a GP, with 14 cases being confirmed by a psychiatrist and another two by a psychologist. Among the control group, five (12%) received a GP diagnosis of depression which was confirmed following psychiatric referral in one instance. Depression was noted to be the most common mental health diagnosis in both groups. A total of 16 (39%) patients in the suicide group received a diagnosis of anxiety in comparison with four (10%) control subjects ($P<0.01$).

In relation to a diagnosis of alcoholism, a statistically significant difference was found between the two groups with a total of 13 (31%) suicide patients receiving a formal diagnosis of alcoholism from their GP, which in seven cases was also confirmed by psychiatric diagnosis ($P<0.001$). No cases of alcoholism were reported in the control group. Of the 26 suicides who had received a mental health diagnosis, the most common combina-

Table 1. Comparison of mean annual number of GP consultations for suicide group and control group.

Year ^a	Mean number of consultations (SD)		
	Suicide	Control	t
10	2.95 (4.31)	1.29 (1.99)	2.14*
9	3.12 (4.58)	1.85 (1.99)	1.58
8	3.76 (4.71)	1.51 (1.69)	2.87**
7	3.49 (3.94)	2.12 (1.94)	1.84
6	3.93 (3.74)	2.39 (2.95)	2.02*
5	4.11 (4.11)	3.17 (3.22)	1.25
4	4.02 (4.02)	2.66 (3.88)	1.48
3	5.68 (4.94)	3.41 (3.94)	2.19*
2	3.68 (3.95)	2.37 (2.44)	1.81
1	6.02 (5.39)	3.17 (3.22)	2.83**
1-10	40.78 (33.54)	23.93 (18.12)	2.69**

^aYear 1 is the year immediately before suicide. Paired *t*-tests with 40 d.f. * $P<0.05$, ** $P<0.01$.

Table 2. Comparison of different mental health diagnoses and number diagnosed by GP and psychiatrist.

Diagnosis	Suicide			Controls		
	Number	General practitioner	Psychiatrist	Number	General practitioner	Psychiatrist
Agoraphobia	2	0	2	0	0	0
Alcoholism	13***	13	7	0	0	0
Anxiety	16**	16	6	4	4	0
Depression	17**	17	14	5	5	1
Panic disorder	2	0	2	0	0	0
Schizophrenia	5	4	5	0	0	0
Other psychoses	0	0	3	0	0	0

Related-samples McNemar test, 1 d.f. ** $P<0.01$; *** $P<0.001$.

tion was that of anxiety and depression, which featured in 11 cases, followed by a combination of depression and alcoholism diagnosed in eight patients. A mental health history that included alcoholism, depression and anxiety was present in five cases.

Within the suicide group, referrals to psychiatrists, psychologists, community psychiatric nurses and social workers were considerably higher than in control patients ($P < 0.001$). Among suicide cases, 18 had at least one referral to a psychiatrist, 10 to a social worker, eight to a community psychiatric nurse and three to a psychologist. Among control patients, two had been referred to a psychiatrist and none to the other services. Suicide patients were noted to have a significantly higher number of admissions to psychiatric hospital (mean 2.19) in comparison with controls (mean 0.20) ($P < 0.01$). Nine suicide patients had between one and four admissions with a further eight patients being admitted on between six and 11 occasions.

Psychotropic and non-psychotropic medication

Over the 10-year period, suicide patients had been prescribed significantly more pharmacologically distinct psychotropic drugs than control subjects ($P < 0.001$). This related to being prescribed a greater number of different antidepressants ($P < 0.001$), anti-psychotics ($P < 0.01$) and minor tranquillizers ($P < 0.001$). The mean number of pharmacologically distinct non-psychotropic

prescribed medications did not differ significantly between suicide and control groups (Table 3).

Suicide cases and psychiatric history

Table 4 provides a comparison of the level of GP attendance between the suicide cases with a psychiatric history ($n = 26$, 63%) and those without ($n = 15$, 37%).

It is apparent that those suicides with a psychiatric history had a significantly higher number of consultations compared with those without a psychiatric history in 4 out of the 5 years preceding death.

Comparison between suicide cases with a psychiatric history and their age- and sex-matched controls revealed suicides with a psychiatric history to have a significantly greater number of GP consultations over the 10-year period than control subjects (mean 40.78 (SD 33.54) versus mean 23.93 (SD 18.12), $t = 2.69$, d.f. 40, $P < 0.01$), and a significant difference occurring in the year preceding death (mean = 6.02 (SD 5.39) versus mean 3.17 (SD 3.22), $t = 2.83$, d.f. 40, $P < 0.001$). A similar comparison was performed on the suicide patients without a psychiatric history in comparison with their matched controls, but no significant difference was found regarding consultation levels.

Table 5 highlights the comparison between the two groups of suicide cases in relation to pharmacological treatment. Over the

Table 3. Comparison of mean number of pharmacologically distinct drugs for suicide group, and control group.

Drug	Mean number of drugs prescribed (SD)		
	Suicide	Control	t
Psychotropic			
Antidepressant	1.05 (1.66)	0	4.05***
Antipsychotic	0.59 (1.32)	0	2.83**
Minor tranquillizer	1.49 (1.66)	0.24 (0.54)	5.05***
Other psychotropic	0.12 (0.40)	0	1.95
All psychotropic	3.22 (3.99)	0.24 (0.54)	4.78***
Non-psychotropic			
Anti-infective	1.44 (1.23)	1.51 (1.17)	0.27
Pain controlling	2.07 (1.46)	1.56 (1.14)	1.98
Other non-psychotropic	1.80 (1.69)	1.66 (1.58)	0.48
All non-psychotropic	5.22 (2.31)	4.73 (2.11)	0.98
Total medication	8.46 (4.17)	4.98 (2.17)	5.07***

Paired t-tests with 40 d.f. ** $P < 0.01$, *** $P < 0.001$.

Table 4. Comparison of mean annual number of GP consultations for suicide patients with psychiatric history and suicide patients with no psychiatric history.

Year	Mean number of consultations (SD)		
	Suicide (psychiatric) (n = 26)	Suicide (non-psychiatric) (n = 15)	t
10	3.38 (5.09)	2.20 (2.45)	0.84
9	4.12 (5.47)	1.40 (1.24)	1.88
8	4.04 (4.95)	3.27 (2.71)	0.50
7	4.00 (4.22)	2.60 (3.34)	1.10
6	4.31 (4.22)	3.27 (2.71)	0.86
5	5.04 (4.67)	2.47 (2.10)	2.01*
4	5.12 (4.47)	2.13 (2.10)	2.43*
3	7.00 (5.45)	3.40 (2.79)	2.38*
2	4.31 (3.82)	2.60 (4.07)	1.35
1	7.27 (4.79)	3.87 (4.95)	2.16*

Year 1 is the year immediately before suicide. Independent t-tests with 39 d.f. * $P < 0.05$.

Table 5. Comparison of mean number of pharmacologically distinct drugs prescribed for suicide (psychiatric) patients and suicide (non psychiatric) patients.

Drug	Mean number of drugs prescribed (SD)		
	Suicide (psychiatric) (n = 26)	Suicide (non-psychiatric) (n = 15)	t
Antidepressant	1.65 (1.74)	0	3.66***
Antipsychotic	0.92 (1.57)	0	2.26 **
Minor tranquillizer	2.23 (1.48)	0.20 (0.77)	4.93***
Other psychotropic	0.19 (0.40)	0	1.84*
All psychotropic	5.04 (4.04)	0.20 (0.77)	4.57***
Anti-infective	1.19 (1.13)	1.87 (1.19)	1.81
Pain controlling	1.92 (1.41)	2.33 (1.29)	0.92
Other non-psychotropic	1.69 (1.76)	2.00 (1.65)	0.55
All non-psychotropic	4.81 (2.48)	6.20 (1.61)	1.94
Total medication	9.85 (4.17)	6.40 (1.99)	3.00**

Paired t-tests with 40 d.f. *P<0.05; **P<0.01; ***P<0.001.

10-year period, suicide patients with a psychiatric history, in comparison with those without, had been prescribed a greater number of different antidepressants ($P<0.001$), antipsychotics ($P<0.01$), and minor tranquillizers ($P<0.001$). The mean number of pharmacologically distinct non-psychotropic prescribed medications did not differ significantly between suicide cases with or without a psychiatric history.

Discussion

The present study, although based on a relatively small number of cases, has confirmed the findings from other workers. In the suicide cases studied, 34% had attended their GP in the month before death in comparison with 38% of suicides who had done so in the study by Mathews *et al.*⁷ In the present sample, 63% of suicides had a psychiatric history, which is again similar to the 62% of suicide patients noted to have a psychiatric disorder in the Scottish study by Mathews *et al.*⁷

Several studies have highlighted the high proportion of suicide victims who have been in contact with the family doctor before death.⁷⁻⁹ Implicit in this concern with the recency of final consultation is the assumption that the GP should have been able to identify potential risk factors and intervene. However, the relevance of recency of last contact must be seen in relation to frequency of contact. If suicide patients are prone to attend their GPs on a higher than average basis, then one would expect a significant proportion of such patients to have had a recent medical consultation before death.

The suicide sample in the present study had an average of six consultations in the year before death and 4.3 per year in the 5 years preceding the final year. Thus, the frequency of contact has little predictive utility in itself among a suicide group who have higher than average attendance. Furthermore, although the overall suicide group had higher consultation rates in comparison with control subjects in 5 out of the 10 years studied, the lack of a consistent pattern suggests little scope for improving identification of all of those who eventually kill themselves.

Over the study period, GPs were more likely to have made a psychiatric diagnosis, prescribed psychotropic medication and made secondary psychiatric referral among a suicide group in comparison with age- and sex-matched control subjects. This hardly suggests that GPs are failing to recognize mental health risks. Furthermore, the sizeable minority of suicide cases without a psychiatric history (15/41) had consultation rates no different

from those of age- and sex-matched controls. It might be argued that these patients had unrecognized psychiatric illness presenting as somatic complaints. However, we found no significant difference in non-psychotropic prescriptions between suicide patients without a psychiatric history and their age- and sex-matched controls. This contrasted with suicide patients with a psychiatric history, who had a significantly higher rate of consultation than those without a psychiatric history in 4 of the 5 years preceding death.

Unfortunately, the present study did not enquire as to the frequency of consultations over a given period both before and after a psychiatric diagnosis had been conferred in comparison with control subjects. Such information may have helped to assess the specific impact of psychiatric diagnosis on GP attendance rates. Furthermore, the validity of the psychiatric diagnosis was not assessed as it was not possible from the information available in the GP notes to verify such diagnoses according to any agreed-upon criteria (e.g. ICD-10, DSM IV).

There is currently no reliable and proven method for greatly improving the identification of high-risk suicidal patients. The strong association between suicide and affective disorder has led to the suggestion that improved treatment of depression will reduce the suicide rate. For example, over 20 years ago, Barraclough *et al.*⁸ indicated that only one-third of suicides with depression had been treated with antidepressants and, of these, most had either received inadequate dosages or had been maintained on their medication without indication of recovery. It is unknown whether the same results would still be found today. However, even for those patients with affective disorder who are appropriately treated, the risk of suicide remains high. In a survey of 92 suicide cases with an index diagnosis of affective illness, approximately 50% killed themselves despite appropriate efforts to treat either the acute or continuation phase of their illness.¹⁰ It is also well accepted that suicide may occur even when a patient's clinical condition is improving, and it has been suggested that this may apply to about one-third of suicide cases.¹¹ Patients with affective illness remain at increased risk of suicide throughout their lives. This may be especially so when a secondary high-risk diagnosis, such as alcoholism, is present, as was the case in approximately 30% of suicides in this study.

Conclusion

It is unreasonable to expect GPs to be able to identify the one-

third of suicides who have no psychiatric history and who are not differentiated from age- and sex-matched control subjects in terms of consultation frequency, specialist referrals or prescribed medication.

Suicide cases with a psychiatric history differ markedly from age- and sex-matched control subjects, but we are unable to say how they differ from the larger group of patients with a similar psychiatric history who do not go on to commit suicide. A study with control subjects also matched on diagnosis would answer this question.

We do not support the notion that there is nothing that can be done to reduce the suicide rate. However, much more detailed research is needed to further our understanding of this often unpredictable aspect of human behaviour.¹² Until we have more detailed information regarding the specific content of GP consultations before death, and how these differ from other consultations of the deceased and from consultations by similar patients who do not commit suicide, then it is premature to assume that GPs are failing to identify indicators of impending suicide.

References

1. Secretary of State for Health. *The health of the nation: a strategy for health in England*. (Cmd 1986.) London: HMSO, 1992.
2. Wright AF. Should general practitioners be testing for depression? *Br J Gen Pract*. 1994; **44**: 132-135.
3. Rutz W, von Knorring L, Walinder J. Long-term effects of an educational program for general practitioners given by the Swedish Committee for Prevention and Treatment of Depression. *Acta Psychiatr Scand*. 1992; **1985**: 83-88.
4. Appleby L, Amos T, Doyle U, *et al*. General practitioners and young suicides: a preventative role for primary care. *Br J Psychiat* 1996; **168**: 330-333.
5. Simpson RJ, Power KG, Wallace LA, *et al*. A controlled comparison of characteristics of long-term benzodiazepine users in general practice. *Br J Gen Pract* 1990; **40**: 22-26.
6. Simpson RJ, Kazmierczak T, Power KG, Sharp DM. Controlled comparison of the characteristics of panic disorder patients in general practice. *Br J Gen Pract* 1994; **44**: 352-356.
7. Mathews K, Milne S, Ashcroft GW. Role of doctors in the prevention of suicide: the final consultation. *Br J Gen Pract* 1994; **44**: 345-348.
8. Barraclough B, Bunch J, Nelson B, Sainsbury P. A hundred cases of suicide: clinical aspects. *Br J Psychiat* 1974; **125**: 355-373.
9. Diekstra RFW, van Egmond M. Suicide and attempted suicide in general practice 1979-86. *Acta Psychiatr Scand*. 1989; **79**: 268-275.
10. Schou M, Weeke A. Did manic-depressive patients who committed suicide receive prophylactic or continuation treatment at the time? *Br J Psychiat* 1988; **153**: 324-327.
11. Weeke A. Causes of death in manic-depressives. In: Schou M, Strömngren E. (eds). *Origin, prevention and treatment of affective disorders*. London: Academic Press, 1979.
12. Medical Research Council. *Suicide and parasuicide*. [MRC Topic Review.] London: MRC, 1995.

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