

ORIGINAL RESEARCH

Service contacts prior to death in people dying by suicide in the Scottish Highlands

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Submitted: 26 July 2011; Revised: 28 March 2012; Published: 4 August 2012

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Rural and Remote Health 12: 1876. (Online) 2012

Available: <http://www.rrh.org.au>

ABSTRACT

Introduction: Many people who die by suicide have been in contact with health services prior to their death. This study examined service contacts in people in urban and rural areas of the Scottish Highlands.

Methods: Highland residents dying by suicide or undetermined intent in 2001–2004 were identified using routine death records. Health service databases were searched to identify general hospital, mental health and general practice notes.

Results: In all, 177 residents died in the time period (136 males). At least one type of record was identified on 175 people, including general practice records (167 people, 94.4%), psychiatric hospital records ($n=87$, 49.2%) and general hospital records ($n=142$, 80.2%). Of these, 52.5% had been in contact with at least one health service in the month before their death, including 18.6% with mental health services, and 46.4% with general practice. In total, 68.9% had a previous diagnosis of mental illness, 52.5% of substance misuse problems, and 40.1% of self-harm. The commonest mental illness diagnosis was depression ($n=97$, 54.8%). There was no difference in rates of GP contact in rural and urban areas. Of those dying in urban areas, 32% had been in contact with mental health services in the previous month, compared with 21% in Accessible Rural/Accessible Small Towns, and 11% in Remote Rural/Remote Small Towns ($p<0.01$). People in rural areas were less likely to have had contact with mental health services in the year before their death ($p<0.01$), and to have had lower recorded lifetime rates of mental health service contact ($p<0.001$), deliberate self-harm ($p<0.005$) and mental illness ($p<0.001$).



Conclusions: Overall service contact rates prior to death by suicide were very similar to the results of a previous meta-analysis. Rates of contact with specialist mental health services were significantly lower in rural than urban areas, and this finding increased with greater rurality.

Key words: general practice, mental health services, primary care, rural health, rural health services, Scotland, suicide, suicide prevention, urban-rural differences.

Introduction

Suicide is an important public health problem¹. Suicide rates vary among areas, and over time; however, common risk factors included male gender, poverty, mental illness and substance misuse², and rates are also high in some rural areas^{3,4}. Higher rural rates may be related to a number of influences. These include isolation, limited support or reluctance to access support, access to lethal methods of self-harm and, in some parts of the world, limited access to medical care following self-harm⁵.

There is good evidence that many people have contact with services prior to their death by suicide^{6,7}. The Scottish suicide prevention strategy *Choose Life* has training of health and social care staff as a major part of its requirements⁸. The training is intended to raise awareness among service providers and improve response to suicide risk.

The Highland Council area is the largest local authority area in the UK. It covers an area of more than 26 000 km², approximately one-third of the land area of Scotland, but has less than 5% of the Scottish population. In Scotland, there have been previous studies in the north-east of the country^{9,10}, but rates of contact prior to suicide for the Highland area are unknown. The work in north-east Scotland did not differentiate between contact rates in different types of area, and no other previous study appears to have examined this.

This study aimed to identify contact rates prior to death by suicide in the Highlands of Scotland, and to establish whether contact rates varied between rural and urban areas.

Methods

The names of Highland residents dying by suicide or undetermined intent, and whose deaths were registered in Scotland during 2001–2004 were obtained from the General Registrar Office for Scotland (NHS Highland residents who died anywhere in Scotland would be identified by this mechanism).

Relevant health service databases were then searched to identify the person's GP, and whether they had general hospital or psychiatric case notes. There are no non-NHS hospitals in the north of Scotland, and therefore searches of these sources are likely to have identified all service contacts. General practice case notes were obtained from practitioner services, and hospital case notes requested from storage.

In a pilot phase, 20 records of each type (general practice, general hospital and mental health) were identified at random, and data extracted independently by three assessors. Results were compared, and a set of standard forms and definitions agreed. All case notes were then re-examined using the standard definitions and forms.

The standard forms were used to collect information from the case notes, and results were recorded on a computer database (Microsoft Access). Categorical data such as the frequency of contact by geographical area were compared



using the χ^2 test. Continuous data, including age by category of contact with services, were compared using the Mann–Whitney *U*-test. The SPSS software package (www.spss.com) was used to obtain the two-tailed level of significance.

Ethics approval

Ethics approval was obtained through the North of Scotland Research Ethics Committee (#05/S0901/12).

Results

Demography

In total, 177 residents of the Highland Council area died by suicide ($n=106$) or undetermined intent ($n=71$) in the period 2001–2004 (136 male). Age distribution is shown according to sex (Fig1).

Previous service contact

At least one set of health service case notes was identified on 175 people (98.9%). General practice records were located for 167 people (94.4%), psychiatric hospital records on 87 people (49.2%) and general hospital records on 142 (80.2%). The overlap between the three groups of case notes is shown (Fig2).

All the individuals except one were registered with a GP. The one person not registered had never been registered with a GP in Scotland. In seven cases the general practice case notes were missing, and two had been transferred to other areas and had not returned. When known case notes were not available, these individuals were excluded from the specific service contact rates (Table 1), because it was not possible to identify the time of their contact.

Service contacts

The previous service contact, as described above, for the different services is shown (Table 1). In some cases there were records in the general practice notes of specialist mental health service contact (for example, clinic letters and

discharge letters) and information from these was also used in calculating total contacts. Any contacts relating only to the last episode of harm that led to death were excluded.

Contacts in the month prior to death: In total, 93 people (52.5%) had a recorded contact with an NHS Highland service in the month before their death. Of these, 32.2% ($n=57$) were in contact with one of the three services, 18.1% ($n=32$) with two and 2.3% ($n=4$) with all three.

General practice: The 78 people who had contact with a GP in the month before death, had a total of 159 contacts in that four week period: 41 people saw a GP once; 15 saw a GP twice; eight three times; ten four times; three five times; and one person saw a GP nine times.

Of the group of 78 people who saw a GP in the month before their death, 39 (50%) reported substance misuse or mental health problems. General practice records noted that 21 of these reported substance misuse problems, and in the majority ($n=19$), the substance being used was alcohol alone.

Twenty-four people consulted GPs with mental health related problems in the month prior to death, of whom 18 had a diagnosis of depression. Of the 24 people noted to have a mental health problem, six were also in the group noted to have a current substance misuse problem. General practitioners noted self-harm in four people in the month before their death.

General hospitals: In total, 22 people had general hospital contacts in the month before their death. One attendance followed self-poisoning, and three were for treatment of alcohol-related harm, including one in which intent to self-harm was suspected. The remaining attendances were for treatment of other physical illnesses.

Mental health services: Of the 33 people seen in the month before death, 16 had a diagnosis of mental illness, four of substance misuse problems, and six of both mental illness and substance misuse. The remainder had no specific diagnosis recorded in the month before death.

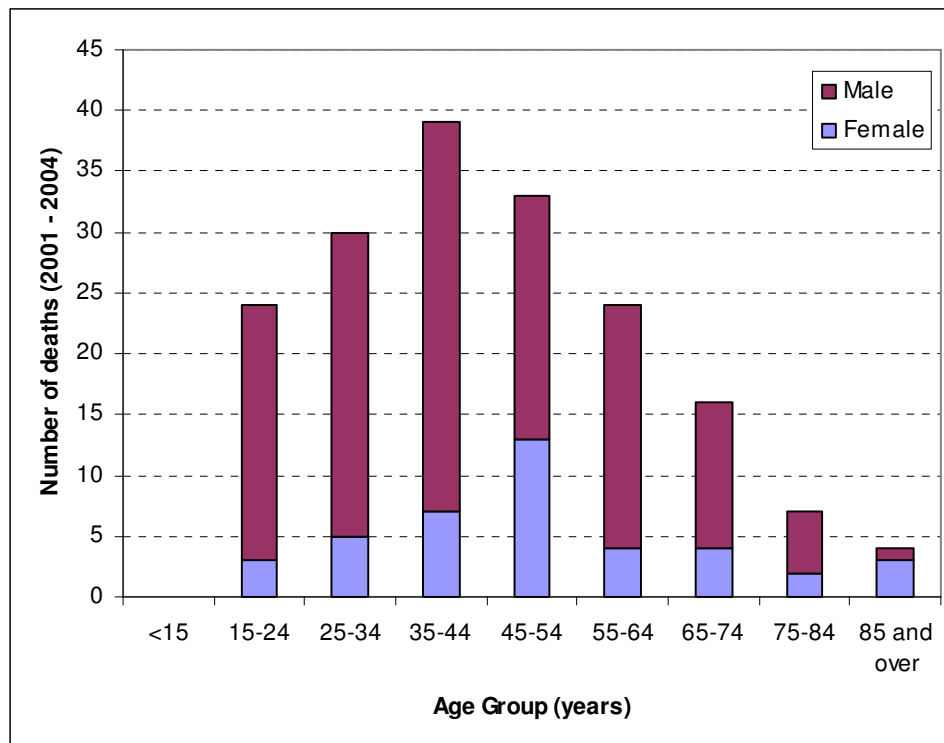


Figure 1: Age distribution of people dying by suicide or undetermined intent Highland Council Area, 2001–2004.

The commonest mental illness recorded was depression ($n=20$, 60.6%) followed by schizophrenia (3, 9.1%), personality disorder (2, 6.1%) and bipolar affective disorder (1, 3.0%). In eight instances, deliberate self-harm was recorded in records in the month prior to death.

The final mental health service contact was with a psychiatrist ($n=12$), a community psychiatric nurse (7), a specialist addiction nurse (3), other mental health nurses (6), a psychologist (1) and mental health support workers (2). In two further cases, a psychiatrist and mental health nurse had seen the person together at the last mental health service contact.

History of substance misuse, mental illness and deliberate self-harm

A history of deliberate self-harm, and diagnoses of mental illness and substance misuse were identified in the three types of case notes. Higher rates of self-harm, substance misuse and mental illness were recorded in the GP notes than in the other notes. Across all three sources, 68.9% had a record of mental illness, 52.5% of substance misuse, and 40.1% of self-harm.

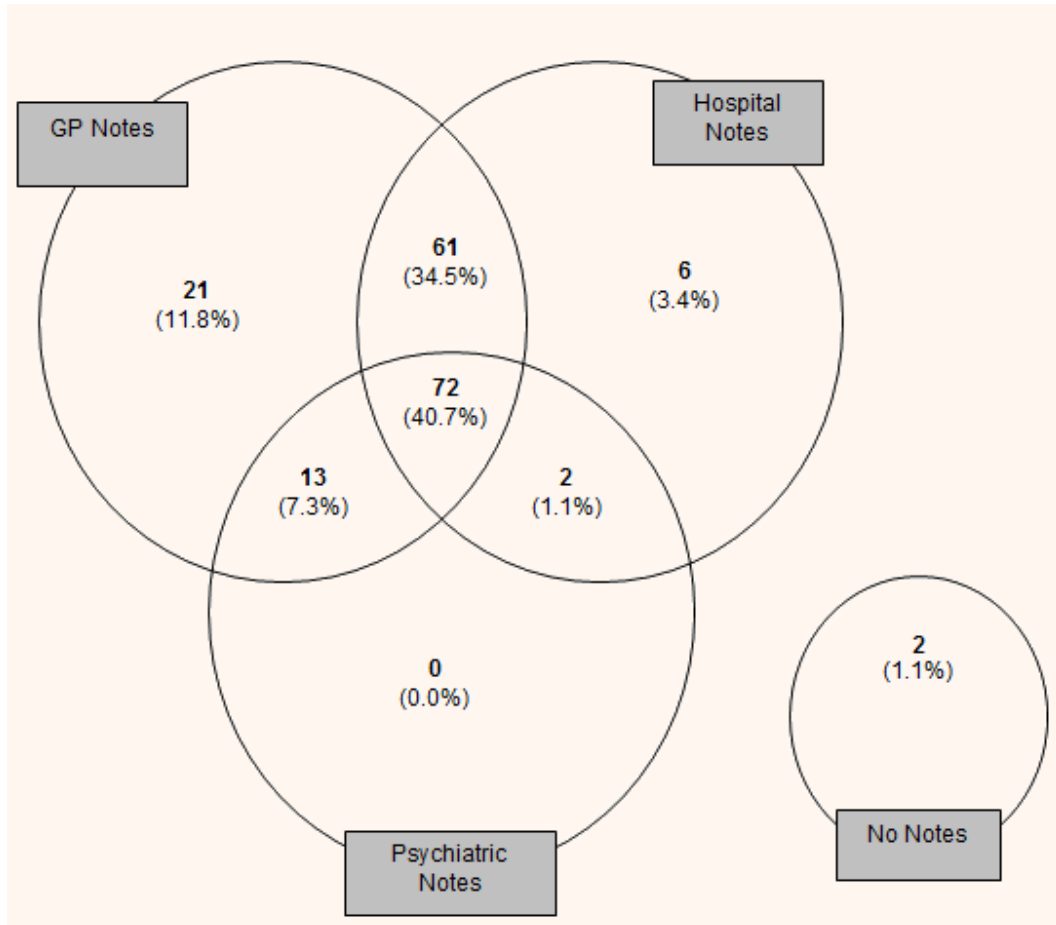


Figure 2: Case notes reviewed.

Table 1: Health service contacts in people dying by suicide or undetermined intent Highland Council Area, 2001–2004

Service	Time of contact – n (%) [†]		
	Month before death	Year before death	Lifetime
Mental health	33 (18.6)	67 (37.9)	112 (63.3)
A & E [‡]	7 (4.1)	42 (24.8)	95 (56.2)
Other general hospital	22 (13.0)	81 (47.9)	141 (83.4)
General practice	78 (46.4)	143 (85.1)	167 (99.4)

A&E, Accident and emergency.

[†]Individuals known to have case notes, but where case notes were not available for review, are excluded from percentages; [‡]A&E visits resulting in a hospital admission.



For many people with a record of mental illness, more than one lifetime diagnosis was noted. The commonest noted lifetime diagnoses were depression (97 people, 54.8%) followed by anxiety (33, 19.6%); personality disorder (20, 11.3%); panic attacks not otherwise described (12, 6.7%); schizophrenia (10, 5.6%); paranoid psychosis (10, 5.6%) and bipolar affective disorder (9, 5.1%). Anxiety was mentioned as a symptom for 47 people (26.5%).

Of people for whom a history of substance misuse was recorded, 53 had used alcohol alone, 10 used drugs alone, and 30 had a history of both alcohol and drug misuse at some point in their lifetime.

Other risk factors

In people seen by a GP in the month before death ($n=78$), GPs noted potentially stressful life events for 19 people. The commonest issue recorded was relationship difficulties (9) followed by divorce or separation (3) and work stress (3). Of this group of 19, either substance misuse or mental illness was also noted for 13.

The GPs recorded physical ill-health in 16 of the people they saw in the month before death. This included many different diagnoses, including two people with cancer.

Contact in the month before death

A comparison was made of people who were in recorded contact with any health service in the month before their death, and those who were not (Table 2). People not in contact with services in the month prior to death tended to be younger and to be less likely to have a known history of self-harm, psychiatric illness, or any previous mental health service contact. The death of people not in contact with services in the previous month was not significantly more likely to be recorded as being of undetermined intent.

Differences by area of residence settlement type

Demography: There were no statistically significant differences among those who died by suicide in age or sex

between Urban, Accessible Rural/Accessible Small Town and Remote Rural/Remote Small Town areas.

Service contact: There were no statistically significant differences in rates of GP contact in one month or one year prior to suicide. There were no significant differences among locations in lifetime or one-month general hospital contact rates.

However, people in Accessible Rural/Accessible Small Towns and Remote Rural/Remote Small Towns were less likely to have had a general hospital admission in the year before their death than those in urban areas ($p<0.05$).

Mental health service contacts are shown (Table 3). People in urban areas were more likely to have had lifetime mental health service contacts, and contacts within one month and one year before death.

History of illness

People in urban areas were significantly more likely to have had a mental illness diagnosed in their lifetime, and to have a recorded history of self-harm (Table 4). There was also a tendency towards more identification of a history of substance misuse in the urban group, although this was not statistically significant.

Discussion

Service contacts

Over half the people who died by suicide or undetermined intent in the Highland Council area in the study period had contact with NHS services in the month before their death. The majority of these contacts were with primary care (46.4% of people), but 18.6% had been seen by specialist mental health services in the month before death. In the year before death, 85.1% had been in contact with primary care, and 37.9% with specialist mental health services.



Table 2: People dying by suicide or undetermined intent with and without contact with any health service within 1 month before date of death

Characteristic	Within 1 month before death n (%)		P-value
	Had contact with any service (n = 93)	No contact with any service (n = 84)	
Age (median)	46	42	<0.05
Sex			
Male	69 (74)	67 (80)	n.s.
Female	24 (26)	17 (20)	
History of:			
Contact with mental health service	72 (77)	40 (48)	<0.001
Deliberate self harm	51 (55)	20 (24)	<0.001
Substance (alcohol/drug) misuse	55 (59)	38 (45)	n.s.
Psychiatric/psychological illness	72 (77)	50 (60)	<0.05
Verdict			
Suicide	57 (61)	49 (58)	n.s.
Undetermined intent	36 (39)	35 (42)	

n.s., Not significant.

Table 3: Mental health service contact in people dying by suicide or undetermined intent by time period of contact, and settlement type

Time period	Contact	N	Settlement type – n (%)			P-value
			Urban	Accessible rural/ Accessible small town	Remote rural/ Remote small town	
One month	Yes	33	17 (32)	6 (21)	10 (11)	<0.01
	No	144	36 (68)	23 (79)	85 (89)	
One year	Yes	67	30 (57)	11 (38)	26 (31)	<0.01
	No	110	23 (43)	18 (62)	69 (69)	
Lifetime	Yes	112	44 (83)	19 (65)	49 (52)	<0.001
	No	65	9 (17)	10 (35)	46 (48)	

These one-month contact figures are very similar to those reported in a review of service contact prior to suicide by Louma et al⁷. This study reported average contact rates in the month before death of 45% for primary care services, and 19% for specialist mental health services⁷. The contact figures for the year before death in the same systematic review were

77% for primary care and 32% for mental health services, suggesting slightly higher one-year contact rates in the Highland cohort than the average of the 40 studies in the meta-analysis.



Table 4: Lifetime history of deliberate self-harm and mental ill-health by settlement type

Lifetime History	History Recorded	Settlement type – n (%)			P-value
		Urban	Accessible rural/ Accessible small town	Remote rural/ Remote small town	
Deliberate self harm	Yes	30 (57)	13 (45)	28 (30)	<0.005
	No	23 (43)	16 (55)	67 (70)	
Substance (alcohol/drug) misuse	Yes	34 (64)	16 (55)	43 (45)	n.s.
	No	19 (36)	13 (45)	52 (55)	
Psychiatric / psychological illness	Yes	46 (87)	22 (76)	54 (57)	<0.001
	No	7 (13)	7 (24)	41 (43)	

n.s., Not significant.

Comparing people who were in service contact in Highland in the month before their death with those who were not, the non-contact group tended to be younger, and to be less likely to have a recorded history of mental illness or self-harm.

Previous mental health problems

In all, 69% of people had a history of mental illness, and 52.5% a history of substance misuse, mainly related to alcohol. The most common mental illness diagnosis was of depression. In a previous UK study, affective disorders and substance misuse problems were common in people dying by suicide after hospital discharge¹¹. Anxiety was commonly recorded in the Highland group, and this is consistent with work suggesting that anxiety may be one of the mediating factors in whether people with mental illness and suicidal ideation go on to act on their thoughts¹².

Differences by settlement type

There were no significant differences in age or sex in people dying by suicide or undetermined intent in different types of location. Despite this, there were significant differences in mental health service contact prior to death, and in having a recorded history of self-harm or mental ill-health.

The lower rates of recorded mental illness in rural areas in the present study may reflect a true difference in morbidity. Although internationally there are significant levels of mental ill-health in rural areas, rates in the UK may be lower because of lower levels of deprivation in many rural areas compared with urban areas. It is also possible, however, that the lack of specialist service contact in this group reflects under-identification of mental illness in rural areas, which could in turn relate to reduced help-seeking or to reduced service capacity.

In a recent series of WHO surveys, individuals who reported being suicidal but had not sought help were asked why they had not sought assistance. The commonest reasons were low perceived need, followed by attitudes such as a wish to deal with the problem alone. Stigma was rarely cited as a barrier to seeking care¹³. While this may reflect severity, it does raise the issue of whether attitudes to treatment vary in urban and rural areas.

Limitations

This descriptive study provides information on the service contacts of people dying by suicide, but not on how this compares with the general population. A previous Scottish study found that people dying by suicide were no more likely to have attended their GP in the month before their death than were age-matched controls¹⁴. The aim of this study,



however, was to identify what opportunity there could be for service intervention, and whether there were differences according to location.

Psychological autopsies were not conducted and only routinely collected data were examined. It is possible, therefore, that the present work underestimates the percentage of people who had experienced mental illness, or who had self-harmed. General practitioners are able to exclude depression in people who present to them with a specificity greater than 80%, but they do not identify all cases¹⁵. A study of north-east Scotland also found that GPs tended to under-identify depression¹⁶.

In a review of psychological autopsies, Cavanagh et al reported that about 90% of people in 76 reports had a mental illness at the time of their death¹⁷ and this is considerably higher than our results from routine records alone. Some later work suggests lower rates of mental illness, however, particularly in people who do not present to services before their death¹⁸.

It is unlikely that UK service contact is markedly underestimated because, in general in the UK, almost all service contacts of patients are notified to their registered GP. Exceptions are confidential services, such as services for sexually transmitted infections, and some national screening programs.

Rural areas of the UK tend to have lower rates of mental illness, which may be related to lower rates of poverty compared with urban areas¹⁹. If the rate of mental illness in people dying by suicide in rural areas is lower than that in urban areas of Scotland, it may suggest a different combination of risk factors. It is also possible that this reflects either under-identification of illness, or a reluctance to present to services.

Conclusions

Implications for services

In this study, a substantial proportion of people had service contact shortly before their death by suicide. It is difficult to

predict suicide, and there is often disagreement on the degree of risk present in an individual²⁰. These findings do lend support to the Scottish strategy of training staff to recognise and respond to suicide risk, however, as many people will come in to contact with services prior to their death.

Almost half the people had no service contact in the month before their death. This indicates that continuing work on awareness of distress and signposting of help agencies is appropriate. The high prevalence of recorded mental illness emphasises the continued need for good quality, readily accessible treatment for mental illness.

Previous work in Highland has reported a higher death rate from suicide and undetermined causes than the national average, after adjusting for available measures of deprivation²¹. The identification of lower rates of mental health service use prior to death in rural residents is a new and striking finding. It is not clear whether this reflects a lower overall contact rate in rural areas of Scotland.

There was no difference in rates of GP contact in rural areas. The lower use of specialist mental health services may include lower perceived relevance of services, decreased recognition of illness by GPs, or decreased access to mental health services.

Hawton et al found that farmers who died by suicide often complained of physical symptoms²², but there is no apparent reason why GPs in rural areas would be less able to identify depression than their urban counterparts. Issues affecting likelihood of presentation and likelihood of referral or acceptance of referral may therefore be involved. This may be related to the likelihood of individuals identifying health and social care as appropriate responses to their problems.

In the absence of other studies, it is not possible to know if this represents a common pattern of decreased service use in rural areas. Understanding whether this is a widespread pattern, and what factors may influence it, requires exploration in future research.



Although specialist mental health services have an important role in suicide prevention in high risk groups, the great majority of people dying by suicide were not in contact with these services. As almost half of the people dying by suicide or undetermined intent had not been in contact with health services in the month before their death, population interventions are clearly important. Despite this, approximately half of the people who died had been in contact in the previous month, and so training for health service staff continues to be relevant to prevention efforts.

Acknowledgements

The project was suggested by Dr Michael Foxley. The authors are grateful to Dr Jim Douglas and Dr Alan Belbin for discussions of the role of primary care, and to Dr Eric Baijal and Dr Margaret Sommerville for supporting the work. The authors are also grateful for the cooperation and time given to this project by the hospital record managers and staff of Caithness General, Belford and Raigmore Hospitals; the contribution of the Practitioner Services Division, in particular Diane Thom and Gordon Grimmer; Michael Perera for helping in case note review, and to the Health Intelligence Team of NHS Highland, particularly Alasdair MacLennan, for analysis of the GROS data. This work was supported by NHS Highland.

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