

Male suicide and occupation in Scotland

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Some occupational groups in England and Wales have higher than expected proportion of deaths from suicide or undetermined intent. This study examined the association of occupation with suicide in men in Scotland.

Information from the General Register Office for Scotland was used to identify deaths from suicide and undetermined intent in 1981–1999 for men aged 16–64 years. Proportional Mortality Ratios (PMRs) and 95 per cent confidence intervals were calculated for all occupational categories.

The largest number of male deaths in groups with elevated PMRs occurred in low paying occupations, such as labourers. Counterhands (sales and stores assistants) and assistants and chefs and cooks had increased PMRs in the 16–45 year age group. Some occupations with access to lethal means of suicide had high PMRs, including medical practitioners in the 16–45 and 46–64 year age groups and hospital ward orderlies, in the younger age group. There were increased PMRs in some rural occupations including farmers, forestry workers, fishermen, and some ships' crewmembers. Groups with low PMRs included drivers of goods vehicles, and bus and coach drivers.

BACKGROUND

Reports from several countries have identified associations between particular occupational groups and high or low suicide rates. In the USA, comparatively high risks have been reported in the construction and mining industries, and in people in some rural occupations, including farming, agriculture services, forestry and fishing.^{1,2} In England and Wales over the periods 1982–1987 and 1991–96 there were increased rates of suicide among males working in occupations with access to lethal means of suicide. Doctors, pharmacists and veterinarians had an increased Proportional Mortality Ratio (PMR) for suicide, indicating an increased proportion of deaths in the occupation from this cause.³ Men in rural occupations, including farmers, horticulturalists and farm managers, forestry workers and gardeners and groundsmen also had higher than expected PMRs. In women, doctors, pharmacists, vets and nurses had elevated PMRs, as did some groups of women in lower paying occupations, including waitresses, cleaners and people in domestic work.³

Suicide rates in men in Scotland increased in the 1970s and 1980s,⁴ and continued to increase in the 1990s,⁵ while after a similar rise in the 1970s and 1980s male rates in England tended to decline in the 1990s.^{6,7} A national suicide prevention strategy has been launched in Scotland, which seeks to reduce suicide rates by 20 per cent by 2013.⁸ No information on suicide by occupational group has been available for Scotland. This article provides information on PMRs by occupation in men in Scotland for 1981–1999 to contribute to the information required for its national strategy.

METHODS

Deaths from suicide (E950–E959 (ICD-9) or X60–X84 (ICD-10) and injuries/poisonings of undetermined intent coded as E980–E989 (ICD-9) and Y10–Y34 (ICD-10) in 1981–1999 in Scotland were identified from information recorded on death certificates. In line with male retirement ages in the time period studied, only males aged 16–64 were included in the analysis. Until 1996, a married woman's own occupation was not included on death certificates in Scotland, and the lower suicide rate in women in Scotland³ meant that too few deaths would have been available to allow any useful analysis of deaths from 1996–1999. For this reason, male deaths alone were examined.

Proportional mortality ratios with 95 per cent confidence intervals by age group (16–45 and 46–64) were calculated for all occupational categories using occupational codes included in the electronic records. To minimise the likelihood of chance findings, only occupations with at least 10 deaths from suicide or undetermined death in the time period, and where the 95 per cent confidence interval did not include 100 are included in tables.³

Proportional mortality ratios compare the proportion of deaths in an occupation from a specific cause to the proportion of deaths from that cause in all occupational groups. A PMR of 100 for a particular occupation indicates no difference in the proportion of deaths from that particular cause. A PMR of 50 indicates that only half the proportion of

deaths expected from all occupational groups were recorded as suicide, while a PMR of 200 indicates that twice the expected proportion of suicide deaths were recorded in that occupational group. An increased PMR can indicate a lack of deaths from other causes, as well as an excess of deaths from the cause being examined. Likewise a low PMR may indicate either an excess of deaths from other causes or a lack of deaths from the cause being examined.

RESULTS

In 1981–1999 there were 1,013,602 deaths in Scotland. Of these, 14,502 deaths were recorded as suicide or undetermined intent (1.4 per cent), of which 10,365 were in men. In 16- to 45-year-old men (Table 1), several low paid occupations had raised PMRs, including counter hands and assistants, hospital orderlies and hotel porters, building and civil engineering labourers, and labourers and unskilled workers not elsewhere classified. The PMR for gardeners, groundsmen and forestry workers was also increased. In keeping with other studies medical practitioners had a higher than expected PMR. Students at university/college had a higher than expected PMR.

Among 46- to 64-year-old men (Table 2), doctors again had a high PMR, as did legal professionals. Two rural occupations had raised PMRs, including farmers, horticulturists and farm managers and fishermen. Builders also had an increased PMR.

PMRs for dentists, pharmacists and veterinarians have been increased in several previous studies. Differences in these occupations in Scotland were not statistically significant. In 16- to 45-year-old men, dentists had a PMR of 128 (95 per cent CI 26–374), pharmacists a PMR of 43 (95 per cent CI 1–238) and veterinarians a PMR of 293 (95 per cent CI 80–749). In 46- to 64-year-old men, the PMR for dentists was 235 (95 per cent CI 76–548), 118 for pharmacists (95 per cent CI 14–242) and 301 for veterinarians (95 per cent CI 36–1,088).

Table 1

Suicide and undetermined intent deaths, highest occupational proportional mortality ratios with confidence intervals for men aged 16–45 years, 1981–1999

Scotland				
Occupation	Number of Deaths	PMR	Lower Confidence Interval	Upper Confidence Interval
Counter hands, assistants	16	195	112	316
Medical practitioners	26	180	118	265
Hotel Porters	20	165	101	254
Forestry workers	40	163	116	221
Hospital, ward orderlies	22	163	102	247
Gardeners, groundsmen	126	146	122	173
Students at University / College	233	143	126	163
Security guards and officers, patrolmen, watchmen	81	137	110	170
Chefs, cooks	95	126	103	154
Building and civil engineering labourers	159	119	102	139
Labourers and unskilled workers n.e.c.	644	117	108	126

Table 2

Suicide and undetermined intent deaths, highest occupational proportional mortality ratios with 95 per cent confidence intervals for men aged 46–64 years, 1981–1999

Scotland				
Occupation	Deaths	PMR	Lower Confidence Interval	Upper Confidence Interval
Plant operators and attendants not elsewhere classified	11	229	114	410
Judges, barristers, advocates, solicitors, lawyers	12	224	116	392
Farmers, horticulturists, farm managers	86	216	175	267
Medical practitioners	13	205	109	351
Hotel and residential club managers	18	194	115	306
Builders (so described)	16	187	107	302
Fishermen	26	164	107	241
Deck, engineroom hands, bargemen, boatmen	34	159	108	228
Managers not elsewhere classified	46	148	108	198

Table 3

Suicide and undetermined intent deaths, lowest occupational proportional mortality ratios with 95 per cent confidence intervals for men aged 16–45 years, 1981–1999

Scotland				
Occupation	Deaths	PMR	Lower Confidence Interval	Upper Confidence Interval
Production, works and maintenance managers, works foremen	14	50	27	84
Office managers not elsewhere classified	14	54	30	91
Metal working production fitters and fitter/machinists	104	79	65	95
Machine tool operators	58	74	58	96
Electricians, electrical maintenance fitters	85	79	64	97
Drivers of road goods vehicles	157	83	71	97

Table 4

Suicide and undetermined intent deaths, lowest occupational proportional mortality ratios with 95 per cent confidence intervals for men aged 46–64 years, 1981–1999

Scotland				
Occupation	Deaths	PMR	Lower Confidence Interval	Upper Confidence Interval
Bus and coach drivers	17	53	31	84
Drivers of road goods vehicles	123	83	70	99

The lowest PMRs in 16- to 45-year-old men (Table 3) were among production, works and maintenance managers, works foremen and office managers. Several other skilled manual occupations also had lower than expected PMRs. In the 46–64 year age group bus and coach drivers and road goods vehicle drivers had significantly low PMRs (Table 4).

DISCUSSION

Several factors may contribute to raised occupational PMRs. Firstly, access to particularly lethal methods of self-harm is likely to be important in occupations such as doctors, nurses and vets.⁹ Male doctors, found to have an increased PMR in this study, also had high PMRs in England and Wales.^{10, 11} A high proportion of doctors in previous studies self-poisoned,^{10, 11} a finding also reported in other countries,^{12, 13} suggesting that familiarity with toxic drugs, and ready access to them, contribute to choice of method. Veterinarians and dentists in this study also tended to have higher than expected PMRs, although the confidence intervals included 100. Some rural occupations are likely to have ready access to firearms.

Secondly, particular job characteristics that predispose to mental disorder, or which make it more likely that someone with mental illness may work in the job, may be important. For example, a prospective American study reported that suicide risk in nurses was associated with both home and work stress.¹⁴ Low pay and lack of job security, discussed further below, may also be important, and easy access to alcohol may be relevant.³ There may be a selection effect:¹⁵ if a person has a mental illness that affects their work patterns, it may increase the likelihood that they will be in a low-paying job, and so may increase the suicide rate in such occupations. Some occupational groups do not have an equal distribution of age groups. Students, for example, are likely to include a high proportion of younger people, in whom other causes of death will be less common, suggesting that higher PMRs in students should be regarded with caution.

People in some rural occupations have been reported to have higher than expected PMRs for suicide and undetermined death.^{3, 10, 16} Farming deaths are over-represented in suicide and undetermined death figures in some rural areas.¹⁷ This study confirmed that younger forestry workers and gardeners/groundsmen had significantly increased PMRs, as did farmers and fisherman in the 45–64 year age group. Firearm availability is likely to be important in this.¹⁸ In an English study, general stressors were important, and farmers dying by suicide were more likely to live alone, lack close friends and have no confidants than were a control group,^{19, 20} suggesting that contextual factors may be important in occupational suicide rates.¹⁵

Deprivation is a major influence on suicide rates, and several low paid occupations had elevated PMRs. Kposowa (1999) reported a high relative risk of suicide in labourers in the United States.²¹ Deprivation alone may account for some occupational differences,²² but associations with deprivation are attenuated when analyses control for unemployment,²³ suggesting that some occupational risk may be influenced by a lack of job security in some low paid jobs.

There are limitations to this study that should be borne in mind when considering the findings. The work relied on routinely collected information on deaths, which denies any opportunity for qualitative detail. There may be a reluctance to cause additional distress to families by recording a death as suicide, and it seems likely that a proportion of accidental deaths are suicides. The low rate of suicide in some drivers in this study, for example, may have been affected by deaths on the road in professional drivers being more likely to be considered as accidents. Including undetermined intent deaths in the analysis should help to reduce classification problems, however, as many of these deaths in adults are thought to be suicides.⁷

Proportional mortality ratios are not rates. The constituent parts of the ratio are not the people at risk, but rather the deaths among the people at risk.²⁴ They depend on the number of deaths from other causes, as well as the number of deaths from the cause of interest. PMRs do, however, have the advantage of not requiring information on the entire population at risk. They are potentially affected by uneven distribution of age groups, and some studies now use age-adjusted PMRs. This study stratified results by two broad age bands, but did not adjust for age. Considering the use of age-adjusted PMRs in future analyses could increase the value of the results. A study in England and Wales used non-age adjusted PMRs for suicide, but analysed the information by time period. The smaller number of deaths in Scotland meant that breaking down the results by both broad age band and time period would have produced large confidence intervals in many groups, because of the small number of deaths. This study therefore provides no information on changes over time.

People in some less affluent groups and those in some rural occupations had higher proportions of suicide and undetermined intent deaths than average. Some occupational groups with access to lethal means of self-harm also had a higher proportion of deaths from suicide and undetermined intent than the general population. The Scottish Executive's suicide reduction strategy includes acknowledgment of the association between poverty and suicide, and this is reflected in these findings. Access to lethal means deserves further consideration in the response to higher than expected proportions of deaths by suicide in some occupational groups.

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Key findings

- A higher proportion of young men in some low paying occupations died by suicide or deaths of undetermined intent than would be expected, including labourers and unskilled workers not elsewhere classified, and building and civil engineering labourers.
- Male doctors in both older and younger age groups had a higher proportion of suicide and undetermined intent deaths than average. This may reflect access to effective methods of self-harm, and familiarity with their use. Dentists, veterinarians and pharmacists tended to have higher PMRs, but the differences were not statistically significant.
- Men in some rural occupations had higher than expected PMRs, including forestry workers and gardeners/groundsmen up to 45 years, and farmers, horticulturalists and farm managers and fishermen in men aged over 45 years.

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