



Suicide mortality by occupation in Canada, 1991-2001

Mustard CA, Bielecky A, Etches J, Wilkins R, Tjepkema M,
Amick BC, Smith PM, Gnam WH, Aronson KJ

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Objective

To describe the association between occupation and risk of suicide among working-age men and women in Canada.



Introduction

Suicide is among the ten leading causes of death in developed countries. Rates of suicide mortality are approximately four times higher for men than for women.

Approximately 70% of all population suicide deaths in Canada occur to persons aged 30-64.

The rate of death due to suicide is generally similar across age groups, in the range of 12-22 deaths annually per 100,000 population.

Suicide deaths as a proportion of all-cause mortality is higher at younger ages (18-24% of all deaths aged 30-34), declining to approximately 1% of deaths at ages 60-64.



Introduction

Three hypotheses link occupational characteristics to the risk of suicide:

- 1) exposure to neurologically-active chemicals
- 2) knowledge of, or access to, the means by which suicide may be accomplished
- 3) occupational demands that increase the likelihood of exposure to psychosocial risk factors such as burnout, isolation or exposure to traumatic events



Summary of Methods

A cohort study of suicide mortality over an 11 year period among a broadly representative 15% sample of the non-institutionalized population of Canada at cohort inception.

Age-standardized mortality rates and rate ratios were calculated for men and women in five categories of skill level and 80 specific occupational groups as well as for persons not occupationally active.

The study sample of persons aged 30-69 at baseline represented 1,700,000 persons who were occupationally active and 397,000 persons who were not occupationally active

Details on the cohort are provided in:

Wilkins R, Tjepkema M, Mustard CA, et al. The Canadian census mortality follow-up study, 1991 through 2001. Health Rep. 2008;19(3):25-43.



Results

The suicide mortality rate was 20.1/100,000 person years for occupationally active men (9.6 million person years of follow-up) and 5.3/100,000 person years for occupationally active women (8.1 million person years of follow-up).

For men and women, age-standardized suicide mortality rates were inversely related to skill level.



Suicide mortality among non-institutionalized men aged 30-69 at cohort inception, by occupational skill level, Canada, 1991-2001

Occupational skill level	Number of Deaths	Person Years at risk	ASMR	SRR	95% Confidence Interval
Professional	187	1,286,350	14.10	0.71	0.61 - 0.82
Managerial	191	1,483,000	13.00	0.65	0.56 - 0.76
Skilled/Technical/Supervisory	672	3,377,130	19.90	1.00	0.94 - 1.07
Semi-Skilled	613	2,517,960	23.70	1.19	1.10 - 1.28
Unskilled	269	937,920	28.70	1.44	1.28 - 1.61
All occupations (reference)	1932	9,602,360	20.00	1.00	
No occupation	424	1,235,860	50.20	2.52	2.19 - 2.89



Suicide mortality among non-institutionalized women aged 30-69 at cohort inception, by occupational skill level, Canada, 1991-2001

Occupational skill level	Number of Deaths	Person Years at risk	ASMR	SRR	95% Confidence Interval
Professional	64	1,395,200	4.20	0.87	0.67 - 1.12
Managerial	19	585,420	3.10	0.64	0.40 - 1.03
Skilled/Technical/Supervisory	95	2,222,060	4.10	0.84	0.70 - 1.02
Semi-Skilled	190	3,040,850	5.70	1.17	1.05 - 1.32
Unskilled	60	860,830	6.40	1.32	1.04 - 1.68
All occupations (reference)	428	8,104,380	4.90	1.00	.
No occupation	227	2,679,240	10.20	2.10	1.77 - 2.49



Suicide mortality among non-institutionalized men aged 30-69 at cohort inception, by occupation minor group, Canada, 1991-2001

Occupation Minor Group	Number of Deaths	Person Years at risk	ASMR	SRR	95% Confidence Interval
Library/museum/archival science	.	8,730	.	>1.00	. .
Nursing/therapy/assisting related	25	58,050	37.6	1.87	1.25 - 2.85
Other service	78	236,570	34.2	1.71	1.37 - 2.14
Other farm/horticultural/husb'ndry	47	149,960	31.4	1.57	1.18 - 2.09
Forestry/logging	34	100,160	29.3	1.47	1.04 - 2.06
Clay-glass-stone processing	8	14,060	57.2	2.87	1.42 - 5.78
Excavating/grading/paving	47	160,980	30.3	1.52	1.08 - 2.13
Water transport operating	.	26,140	.	>1.00	. .
Motor transport operating	136	509,260	27.5	1.38	1.14 - 1.66



Suicide mortality among non-institutionalized women aged 30-69 at cohort inception, by occupation minor group, Canada, 1991-2001

Occupation Minor Group	Number of Deaths	Person Years at risk	ASMR	SRR	95% Confidence Interval
Physical sciences	.	12,820	.	>1.00	. .
Office machine/related operating	16	145,600	10.5	2.17	1.30 - 3.62
Other service	22	251,620	8.5	1.75	1.16 - 2.64
Metal machining	.	6,440	.	>1.00	. .



Discussion

Among occupationally-active men in this large Canadian cohort, significantly elevated rates of suicide mortality were observed for nine occupational groups and protective effects were observed for six occupational groups.

Among women, significantly elevated rates of suicide were observed in four occupational groups and no protective effects were observed.

This study found a gradient in suicide mortality risk by occupational skill level for both men and women.



Discussion

In a study of mortality among occupationally-active US adults over the period 1984-1997, Steenland reported a rate of suicide mortality (18.1/100,000) approximately 40% higher than observed in this Canadian cohort (13.3/100,000).

Comparing the suicide mortality rate among the 25% of cohort members with the highest occupational rank to the 75% of cohort members in lower-ranked occupations, the Steenland study reported a population-attributable fraction of approximately 40%.

The population-attributable fraction for suicide mortality among occupationally-active Canadian adults was approximately 35%.



Discussion

The elevated suicide risk for men in some transportation occupations, heavy equipment operating occupations, allied health care occupations, and agricultural occupations replicates findings in other studies.

These findings provide support for the hypotheses that occupations with greater access to the means by which suicide may be accomplished (or occupations with greater potential exposure to neurologically-active agents) may be at greater risk of suicide mortality.



Discussion

There is an important gradient in suicide mortality risk relative to occupational skill level for both men and women, suggesting a greater burden of personal and environmental psycho-social risk factors among lower-status occupations.

The characteristics of specific occupations probably do not substantially influence the risk for suicide in Canada.

Suicide prevention strategies in occupational settings should continue to emphasize efforts to restrict and limit access to lethal means, one of the few suicide prevention strategies with proven effectiveness.



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